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# An Address
ON
# THE APPROACH TO SURGERY.

DELIVERED AT THE OPENING OF THE SESSION AT KING'S COLLEGE HOSPITAL MEDICAL SCHOOL

BY

SIR BERKELEY MOYNIHAN, BT., M.S.,
PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

THIS is Lister's year. One hundred years ago Lister was born. Fifty years ago this hospital had the courage to invite him to join its staff, and on the day of his inauguration Lister delivered this annual address at the opening of the winter session. At the centenary celebrations held in London in April and in Edinburgh in July much was said of Lister's work, of the revolution in surgery of which he was the sole and direct cause, and of the unequalled services to mankind which he was privileged to render. Yet there remains, I think, something more to say, and what occasion could be more fitting than this: what platform more appropriate?

The story has often been told, and there is no need to repeat it here, of the horrors and tortures of surgery before the middle of the last century. The craft of the older men was possibly in some respects superior to our own; in swiftness of movement especially they are said to have been almost incredibly expert. If only the cinema had then been able to record an amputation of the thigh performed by Liston, or an excision of the jaw by Ferguson, I think we should all be as much startled at their rapidity as horrified at the general uncleanness, at the demonstrable absence of any conception of the truths regarding infection upon which all operative methods to-day are founded. Little wonder is there that surgery was likened to butchery. Lord Thurlow, when the bill to indemnify the Surgeons Company, and to give it greater power over the profession, was under discussion said, "There's no more science in surgery than in butchery." To which Mr. Gunning answered, "Then, my lord, I heartily pray that your lordship may break your leg, and have only a butcher to set it." This was the same John Gunning who is said to have given that flat contradiction to John Hunter which acted like a sentence of death. Lister himself speaks of "the bloody and butcherly department of our art."

Surgery is in these days both Science and Art. As Science it accomplishes the purposes for which every science exists: to acquire direct knowledge, to accumulate facts, from a multitude of individual examples to raise a broad truth, to weave generalizations, in its highest accomplishment to link cause and effect. We bring to our aid inductive and deductive logic, recalling with pride that both these weapons of the intellect were first brought into use and established by members of our own profession. For as Hippocrates was parent of the inductive, so was Galen of the deductive method. As Science surgery has not only separate existence, but in its wider sense it is related to, and dependent upon, many other sciences: upon biology, chemistry, physics, physiology, and the like. Discoveries in these sciences not seldom react upon surgery, whose progress has in the past often taken impulse from them; whose progress cannot now continue without them. But surgery is not only, as many suppose, an applied science. If we could conceive it bereft of the aid of all other sciences, surgery would still remain a science of exact observation, of inductive reasoning, of pursuit and discovery of broad truths—a method of seeking the causes no less than the remedies of many of the diseases which afflict mankind.

As Art surgery is incomparable in the beauty of its medium, in the supreme mastery required for its perfect accomplishment, and in the issues of life, suffering, and death which it so powerfully controls.

The methods by which surgery, both as Science and Art, could be created, directed, and expanded were fashioned in early days by Hippocrates and Galen, but for more than a thousand years they were discarded. The works of the great masters were erected in the intellectual marketplaces of the world as idols which all men must worship, or pay the price even with their lives. It is lamentable to realize that infinite harm may in the end be wrought by great teachers when their disciples slavishly imitate and perpetuate not the methods by which they won knowledge but their so fallible doctrines.

Men have not been reluctant to pay tribute to Lister for his incomparable services to the world, through the discovery of the principles underlying the modern practice of surgery, but they have been slow to realize that the eternal truths which he expounded are no less applicable in the domain of medicine. Infection plays a part also in the causation of those diseases which remain the province of the physician. First to discover and to propound this truth was William Hunter, who, in studying pernicious anaemia in the year 1900, became convinced of its dependence upon oral infection. The connexion between these two conditions—between probable cause and tardy effect—seemed so slender, so incredible, that many workers did not even pay the tribute of inquiry. In medicine a new idea rarely obtains a friendly greeting at the moment of birth. We do well to be sceptical, to demand proof upon proof, and to seek evidence in our own experience before accepting a new doctrine. But when scepticism leans to hostility and is nurtured in derision we become worthy of blame. Quick to accuse Lister's contemporaries for their disdain and incredulity of our great master, we in our day are not free from numbing and sterile apathy. Since the year 1900 Hunter has fought with belated success for the recognition of focal sepsis as a cause of far distant and seemingly disconnected disease. To read his several papers to-day is to be convinced not only of the accuracy but of the far-sighted vision of his teaching. "A voice crying in the wilderness," and, like that other, we now realize that his, too, was teaching a true gospel.

It is not yet realized, I think, that Lister's work has not only revolutionized the scope and practice of surgery, and revealed the clue to the so-long-hidden mysteries of many systemic diseases, but that it has also given to the surgeon and to the laboratory worker the strong instrument of research.

So rapid has been the advance of surgery, so exacting the demand made upon those who practise it to train themselves in the manipulative skill necessary for the performance of newly conceived and newly designed operations, that in recent years few surgeons have found it possible to give adequate time to laboratory research. Surgeons have been regarded, and have certainly too narrowly regarded themselves, as mere executants. They are in truth experimental biologists; and in the last two generations have carried out valuable researches into the etiology, clinical manifestations, and therapy of disease. Their observations of the structural changes which in the human body cause the symptoms they sought to relieve have brought about a complete revision of our knowledge of visceral disease. Their work has been research in its highest form: it has been carried out upon the bodies of men; it has afforded eagerly taken opportunities for observing a host of new facts; it has exercised the faculties of induction and deduction; it has often linked unsuspected causes with remote effects. This it has done, mindful all the while of the purpose for which it exists—alleviation of suffering or rescue of threatened life.

The story of the conquests of surgery to-day would be received with incredulity by Lister himself. It is not known that the master ever performed an abdominal operation; yet he it was who made all our triumphs possible. Before Lister's day the opportunities for investigating the processes of diseases in the patient's lifetime hardly existed, and the dangers of even the slightest experiment upon animals were so formidable as to be almost prohibitive.

Research in the science of medicine, it is clear, is of two kinds—direct and analogical. Direct research is carried out by the surgeon as he conducts an operation. Analogical research is conducted upon animals or in the laboratory, and its chief purpose is to test, to illustrate, to interpret, to explain, or to expand the lessons learnt by direct research, or to explore the paths suggested by it. The difference between direct and analogical research in surgery is the counterpart of the difference which existed in Galen's day

between direct and analogical research in anatomy. Much of Galen's work is based upon observation of the structure of animals; by analogy this knowledge was applied to man. Are not the physiologists to-day perpetrating the very same error as our great forerunner? Are they not neglecting opportunities for direct research and too implicitly trusting to analogical research? Anatomy as a science applied to man was firmly established by Vesalius. Do we need in physiology to-day a Vesalius to lead us to the true faith? Why, when investigations into the normal processes of physiological activity or into aberrations from the normal can be conducted upon human beings, are so many opportunities neglected? Why are animals selected for the demonstration of certain physiological truths, and why are physiologists content merely to expound truths obtained by observation and experiment, when a visit to the wards would enable the teacher to imprint in indelible characters upon the minds of his pupils these same truths demonstrated upon the human body? Why are so many anatomists content to teach only on the dead body?

Lister made analogical research safer than ever before, but he was the one and only creator of direct research. His labours freed experiments upon animals from all the risks attaching to infection, and thereby powerfully increased the opportunities of the biologists. The new weapon of direct research upon man during remedial operations or after grave injuries was forged by him alone.

The simplicity of analogical research is of immense advantage. It demands ingenuity in devising and high technical skill in executing experiments, and intellectual honesty in observing and recording results. But the whole analysis of the experiment is objective. A plain answer is given to a plain question; and interpretation should offer few difficulties to the trained mind. In direct research, observations and their interpretation present perplexities which appear to be almost beyond the reach of analysis, for subjective sensation and complex emotional states are so apt to confuse the issue. Man, being a far more sensitive creature bountifully endowed with the gifts of expression, can tell us more of himself, of his discomforts, pains, and other manifold clinical occurrences, than any animal submitted to experiment. And elucidation, not only of facts directly observed, but of sensations of all kinds, their chances and changes, as experienced by the patient, is a matter requiring great industry, the skill of an expert cross-examiner, and a high degree of intellectual integrity free from all prejudice to appraise all matters with accuracy. He who is to carry out direct research should therefore first be trained in analogical methods.

For research into the conditions and causes of disease in man both methods of intellectual approach must be traversed. We need direct research to give us our first facts, to set the problem; through analogical research we seek the solution of our difficulties, an annotation upon our disclosures, and an analysis of individual factors in a complex problem wherein many are involved.

As an example we may take the subject of gastric and duodenal ulcer. Its submission to direct research has changed the whole front of our knowledge of this disease. Duodenal ulcer, indeed, except as a pathological rarity, did not exist for the clinician until the surgeon revealed it. He created its clinical existence, differentiating it from those other diseases which so closely mimic it; he has devised the methods of its surgical treatment when it has proved recalcitrant. He has not only brought duodenal ulcer into the open, he has shown its frequency as compared with gastric ulcer; he has discovered something of its most impressive antecedents; he has studied conditions which coincide with, and perhaps contribute to it. Of the morbid anatomy of gastric ulcer we had learnt a great deal from Matthew Baillie, Cruveilhier, Brinton, and others, but its clinical recognition was fraught with grave inaccuracy. Even to-day the diagnosis of "gastric ulcer" made upon clinical evidence alone is perhaps more often wrong than right. But clinical inaccuracy and bewilderment are at last yielding to patient research by the surgeon, ably supported by the radiologist. We are substituting truth for make-believe, gradually clearing away the multitudinous errors which have so long encumbered this subject. We seek to walk by sight, not by faith alone.

In surgery the hand of the beginner is heavy. In our earliest experience of gastric operations we found not infrequently that where a confident diagnosis of "gastric ulcer" or "duodenal ulcer" had been made, based upon the clinical knowledge of the times, the stomach and the duodenum showed no slightest lesion. A few little tags between the transverse meso-colon and the stomach were held to confirm the diagnosis; or a blanched area on the anterior wall of the duodenum was regarded as the scar of a superficial ulcer. Gastro-enterostomy, so marvellously successful in case of obstruction at the pylorus, was then performed: for at that time the short-circuiting operation was credited with almost magical therapeutic power. When the after-history of such patients was traced the results were always indifferent or bad, sometimes lamentable. It was not long before I was driven to enunciate the doctrine that a chronic ulcer in need of surgical treatment only existed when it was "visible, palpable, demonstrable," and that surgical treatment should be adopted only when the presence of the ulcer was thus indubitable. I regret to find that in all countries there are still surgeons whose practice does not endorse this teaching.

When in my own work the "ulcer" so confidently diagnosed did not display itself, wider search was made as soon as this became safe, other abdominal organs being in turn scrutinized. The results of this extended inquiry were most interesting. We sometimes discovered a gall bladder full of stones, an appendix showing advanced disease, a group of tuberculous mesenteric glands, or, again, a patch of tuberculous ulceration in the intestine, large or small. Sometimes it was an enlarged spleen of splenic anaemia, and, in rarest instances, a malignant growth of jejunum or colon. And so by degrees we were brought to realize the inaccuracy of many clinical descriptions of intra-abdominal disorders, and of the estimates of their relative frequency. We learnt that many diseases betrayed themselves by symptoms confidently ascribed to defects in organs other than that attacked.

For the vague, loose, inaccurate account of symptoms something approaching precision could now be substituted, to the great advance of our clinical knowledge. This extended research was soon made as a matter of routine, and, to our surprise, isolated disease within the abdomen was found to be far less frequent than we had supposed. A patient suffering from a duodenal or a gastric ulcer, or harbouring gall stones, was discovered to have a diseased appendix. And it soon became evident that this association must not be regarded as accidental—that, indeed, the infection of the appendix was certainly the precursor and very probably the cause of pathological conditions present elsewhere. We now regard all ulcers and all gall stones, except the solitary cholesterin stone, as consequences of infection conveyed from a distance. William Hunter's thesis—his application of Lister's teaching to general medicine—was true here also. For it was rare to find any patient suffering from gastric or duodenal lesions in whom a focus of infection was not present, and the evidence is now, I think, incontrovertible that it is from such centres of infection that organisms are carried to far distant parts, there to induce a gross organic lesion, whose connexion with its cause seems remote and improbable, and whose symptoms completely overshadow those of the original infection if, indeed, these latter have ever been present.

If, now, this subject is submitted to experimental analogical study we find, at first, that there is an insuperable difficulty in causing conditions identical with those observed in man. The chronic gastric or duodenal ulcers with their seasonal variations in activity—periods of remission alternating with periods of liveliness, times of healing with times of destruction—do not occur, and have not yet been artificially produced, in any animal. But the cultivation of organisms from ulcers removed by operation has had interesting results. Rosenow's work upon the elective localization of microbes indicates that certain organs provide a more suitable culture medium than others, that there is affinity between soil and seed. He and his pupils Nickel and Hufford have shown that there is a green-producing streptococcus which, cultivated from specimens of gastric or duodenal ulcers removed by operation,

has an affinity for the stomach and the duodenum. After innoculation it causes haemorrhage and ulceration in different species of animals. These analogical researches suggest that, though other factors doubtless are at work in addition to infection in leading to the development of an ulcer, they appear to be powerless to develop the chronic form of ulcer of the stomach or duodenum unless infection is added to them or precedes them.

Experiment and observation were never more happily united than in Lister's work. The discovery by Pasteur of the fact that fermentation was due to living micro-organisms was illustrated by Lister in a variety of experiments. The method of controlling or preventing the activity of microbes within the area of operation and within wounds was studied upon man—was, in fact, a piece of direct research. One germicide or one mode of dressing after another was tested and for a time adopted, only to be finally discarded or retained as clinical experience seemed to decide its value. For Lister realized that it is not merely killing of microbes which is to be desired; the problem is to render them inert within a wound without injury to the sensitive tissues of the body, whose helpful activities might be lessened or destroyed by the corrosive action of a germicide. A host of observers have laboured earnestly to discover new antiseptics, bactericidal power in contact with germs in a test-tube being regarded as the index or the proof of their clinical value. We know only too well how illusory are such beliefs. For the death-dealing power of a chemical agent *in vitro* is no measure of its full value in clinical work. Wound secretions add a new factor to the problem. Indeed, I have little doubt that, as far as wound applications are concerned, the value of an antiseptic is not to be gauged by its bactericidal but rather by its antitryptic power. We do not so much seek to kill germs within a wound as to encourage the wound in its process of resistance to their attacks—to exalt the natural bactericidal power of wound discharges. This is perhaps not the best, but at the moment it is the most apposite, of the illustrations which might be given to show the mutual interdependence of clinical and laboratory work, of direct and analogical research. To the clinician this needs no demonstration, but I fear the laboratory worker is in danger of becoming a little too eager to exert dominion in territory which his skill has not yet conquered. Lister's work is now being enlarged and perhaps completed by Almroth Wright, who by his study of immunity has made it clear that, whereas Lister sought only to diminish or to destroy bactericidal attack, success may also be found in our increased defence against microbic invasion.

The changes that have taken place in surgery, the great increase in the number, intricacy, and scope of operations, have made it far more necessary than ever before that the surgeon should be a skilled craftsman. To practise the craft with something near perfection a man must surrender his whole life. To attain a certain facility in operative work is not difficult: to imitate the master's methods and to follow the movements of his skilled hands is within the easy competence of many. Man, Aristotle tells us, is the most imitative creature in the world, and learns at first by imitation. It is natural for us all to delight in works of imitation, but in imitation there lies a great danger. Many of the operations in surgery have now become so standardized, so perfected and simplified by a multitude of workers, that they can be imitated by others with a degree of success which, though falling short of the best, is yet, by comparison with the results of a generation ago, worthy of high praise. This has unhappily led to the too frequent performance of operations, and to their performance by those whose judgement has not kept pace with their technical accomplishments. Perhaps the most abused operation in surgery is gastro-enterostomy. A distinguished Continental surgeon has fathered a paper by one of his pupils on "gastro-enterostomy a disease." The anastomosis is in all truth a disease when performed in the absence of a sufficient cause or in an inartistic and vicious manner. That it is frequently performed when not needed—that it is performed by the clumsy imitator, is certain. Many of us have had the bitter duty of undoing such anastomoses or of resecting the ulcer which has developed in consequence of them. The physician who sees such cases condemns the operation: in that, surely, he is wrong; his strictures and ours should fall not upon the operation but upon the operator. I conceive that a duty rests upon the physician greater than he realizes. When a physician for whose talents and devotion I have great respect expressed his regret that he could not agree with my advocacy of surgical treatment for chronic incoercible duodenal ulcer because the mortality of the operations practised upon his cases was over 10 per cent., I was constrained to say that, were the mortality in my own hands so high, I should abandon surgery. The duty rests upon the physician, if he advises operation, to point out that the mortality of operative work varies with the operator; that though in general terms there is an average mortality for every operation, in cases of difficulty or danger, where the fine issues between medicine and surgery must first be decided, and much depends upon experience, the choice of a competent and practised operator is necessary. Many of us, I suspect, are at times placed in very difficult positions. A patient is sent for our opinion as to whether an operation shall be performed for a certain condition, and the medical man or the patient himself tells us that in the event of an operation Mr. Blank will perform it. We may agree with the diagnosis, we may agree that an operation is certainly necessary, and we may know that the suggested operator is by no means a wise choice. If it is true that all patients cannot have the best, all ought at least to have the best possible.

There is no doubt that a change in the training of the surgeon is imminent, and is certainly overdue. What should be the approach to surgery? It has long been the custom for those waiting to obtain a post on the surgical staff of a hospital to spend months or years in teaching anatomy. And what anatomy have they been compelled to teach? "Descriptive anatomy," the bare record of the physical characters of the various structures of the human body. Students, in accord with modern custom, must be taught the origin and insertion of muscles; the origin, course, branches; and destiny of nerves; the source, divisions, and direction of vessels and the like—a dull catalogue of dead things. For descriptive anatomy has in all countries of the world for a century been divorced from functional anatomy. Sir Arthur Keith has told the story of this lamentable severance. The early English anatomists, from William Harvey onwards, were not content merely to say in words what any man could see with his own eyes. They were deeply concerned not only with the appearance of parts, but with the meaning attached to structure. They desired to know not only how organs of the body were constituted, but why they were so made. Their interest was engaged by the function no less than by form. John Hunter was intensely occupied with dissection; hardly a day passed without his spending many hours in studying the anatomy of parts in man, and in any animals whose bodies he could beg, borrow, or steal. But he sought to know not merely what and where the various structures were, but even more the function they fulfilled. For him, as Keith says, "it was not enough to recall that the wall of the aorta was twice as thick as that of the pulmonary artery, or that the walls of some veins were thick, and of others thin; he immediately set to work to find out the significance of these facts; he appealed to comparative anatomy, to embryology, to pathology, and experiment for an explanation." In February next we celebrate the 200th anniversary of John Hunter's birth, and we hope then to display Hunter's own handiwork in such manner as to show the variety of his intellectual appetite and his unsurpassed skill in dissection. But dissection was always a search for the reasons of the actions of parts, not merely for their structure.

How, then, did anatomy go astray? Keith rightly traces the catastrophe to the influence of France and to the delightful gifts of our Gallic colleagues for systematic and logical thought with orderly and luciferous expression. It seems that the determining influence was that of Winslow (1669-1760), professor of anatomy in Paris. His teaching, accounted the best in Europe, was eloquent, formal, precise. "Whilst merely conveying to his hearers or readers what they might see with their own eyes at a glance, he left them with the pleasant impression that they were drinking

at the very fountain-head of pure knowledge." He purposely abstained from attempting to explain the meanings of the structures he described, and in doing so impoverished the study of anatomy. The standard set by him was universally followed, and was to find its highest expression in one of his successors—Bichat (1771-1802). At the time when I became a student, forty-four years ago to-day, we were taught anatomy as we should be taught the plan of a city, learning the names of houses, of main streets, of their branches and turnings; by whatever gate we entered we thus learned to find our way about. But to the people who lived in the city, their industries, their way of life, the part they filled in the community, we were hardly expected to give a thought. For all we knew the city might be dead.

It is true that the surgeon must know the formal anatomy of the human body—no very difficult attainment, though he will sometimes find that he still must make his own fresh investigations. When, for example, certain problems presented themselves in connexion with the operative treatment of gall-bladder disease, my colleague Mr. Flint, at my suggestion, examined in the *post-mortem* room 200 bodies, and was able to teach us new truths relating to the vascular supply of the gall bladder and the anomalies of the ducts of the liver. But to be constrained by custom to teach successive generations of students the details of descriptive human anatomy, to be compelled day after day, year after year, to restrict one's teaching to the elementary parts of a finite subject, human anatomy, is insidiously to develop an intellectual complacency, a feeling that one is master of one's subject. Nothing so easily destroys a man's capacity for thought and his delight in indulging it (it is, alas! sometimes a torture) as the restriction of his mental efforts to a limited part of a subject now hardly capable of extension. It is difficult to imagine any training less fitted in these times for the young surgeon. Anatomy as an approach to surgery cannot long continue to be the descriptive anatomy of recent years, a sterile derivative of true anatomy which embraces a study of functional activities and purposes. We must return to the anatomy of the English school, the science founded by Harvey and pursued by Hunter, Charles Bell, and Lister; the science which searched in the Aristotelian phrase for "final causes," and which tried to answer the question "To what end?" In my days I did my best to escape from the insipid routine teaching of anatomy by devoting a part of almost every day to original work in the *post-mortem* room and in the dissecting-room, and upon foetuses which I besought my friends in general practice to send me. I worked upon the subject of internal hernia, and upon the rarer forms of external hernia. And I was saved from the cramping influences of the dissecting-room by the surprising desire of many medical men to surrender their patients to my immature skill at a time when abdominal surgery, having survived the dangerous pioneer period through which it had just been steered by Spencer Wells, Lawson Tait, and Mayo Robson, was at length becoming so safe that many diseases hitherto beyond the reach of the surgeon were now being successfully attacked.

But all my life I have wished that my training had been different. Were my days to come again I should, after leaving examinations behind, spend the time necessary to make an adequate knowledge of human anatomy my permanent possession, and should then escape to experimental research and, in a community of like-minded people, endeavour to train myself for the high destiny of a surgeon, the one man who may engage in direct research. My time would be spent in the laboratory, where a youth of plastic mind may learn the methods of approach to new problems or to new extensions of old problems; where old knowledge is merely an impulse to the search for new; where intellectual dissatisfaction is victor over narrow complacencies; where the religion of research inspires him and equips him for his work in days to come. If surgery is to be something more than a wonderful craft, if it is to be the instrument of research which I believe it to have been, and to be destined to be in the future, those who practise it must have their minds shaped and strengthened by conflict with unsettled problems, not cramped and sterilized by monotonous exercise within a narrow province of static knowledge. Their minds must be trained in the laboratory, in analogical research, so that they may be more effectively exercised both in the operation theatre and in the wards upon direct research; not, I need hardly say, to neglect of the dissecting-room, but to its relegation to a subordinate position. The comradeship of laboratory workers and clinicians should be intimate and unbroken. The scientist at work in the laboratory can never reap the full reward of his lonely researches without close and loyal collaboration with the clinician. Nor can those who serve the same cause in a different atmosphere give to their patients the best aid of medicine and surgery without the help of the scientist. The training of the surgeon must not only allow, it must urge, his mind to stray beyond the hard boundaries of old knowledge, over the edge of firm beliefs, into wide territories as yet unexplored and even undivined. In this way only is there escape from the danger which besets the surgeon in the future, the peril of a facile automatism. In this way may the physiologist be brought back from his vagrancies and encouraged to realize that his science best fulfils its destiny when it is applied to the understanding of the functions, normal and aberrant, of the organs of man. It is a delight to me to see that a few of the younger surgeons in this country are taking the path which I should follow if I were on the threshold of a surgical career.

Lister was thrice, four times, happy in growing up under the sway of men steeped in the old ideals of anatomy. The intellectual influences of his life came from Sharpey and from Wharton Jones—dirty, despised, yet passionate in his zeal for the discovery of truth by way of observation upon living structures. Like their teacher, Alexander Monro (*secundus*), these men never wearied in the search for *reasons*. They were not content with mere knowledge of the construction of parts, but in that knowledge sought the clue to the several actions of which those parts were capable. In Lister's early papers, "Observations on the contractile tissue of the iris"; "On the muscular tissue of the skin"; "An inquiry regarding the parts of the nervous system which regulate the contraction of the arteries"; "An inquiry into the functions of the visceral nerves," we see clearly that he was carrying on the high tradition in which he was trained. I have not gained the impression that Lister was a man of really exceptional intellectual gifts. Rather was he a man of great intelligence trained in the very manner which helped his mind to work to highest advantage in his special calling. Advances in medicine and surgery are made by men who to the faculty of observation add the power of conceiving and carrying out experiments, not in the laboratory only, but also in the operation theatre and in the wards. For disease and accident alike may be regarded as beginning experiments for us; and it is for us to add factors of our own devising, to exert influences designed to check or to change the course of events, and, in so doing, to judge both causes and effects and the range of our power over both.

No training of the surgeon can be too arduous, no discipline too stern; and none of us may measure our devotion to our cause. For us an operation is an incident in the day's work, but for our patients it may be, and no doubt it often is, the sternest and most dreaded of all trials, for the mysteries of life and death surround it, and it must be faced alone. Those who submit to operation are confronted, perhaps after long and weary days or months of suffering, with the gravest issues, and far more often than many of us suppose they pass into the valley of the shadow of death, and, in stark dismay, wonder with Beatrice in her aching solitude and panic what will come to pass

> "If there should be
> No God, no Heaven, no Earth in the void world
> The wide, gray, lampless, deep, unpeopled world."

To give courage to those who need it, to restore desire for life to those who have abandoned it, with our skill to heal disease or check its course—this is our great privilege. Ours are not the mild concerns of ordinary life. We who, like the Happy Warrior, are "doomed to go in company with Pain and Fear and Bloodshed" have a higher mission than other men, and it is for us to see that we are not unworthy.

# TUBERCULOSIS OF THE KIDNEY.*

BY

SIR JOHN THOMSON-WALKER, M.B., C.M., F.R.C.S.,
Lecturer on Urology, King's College Hospital.

TUBERCULOSIS of the kidney illustrates the advance in diagnosis and treatment in renal surgery in the last twenty-five years. The mortality of nephrectomy for tuberculosis of the kidney between 1890 and 1900 was 25.4 per cent.[1] At that time no adequate means of ascertaining the presence and condition of the second kidney were generally employed. The use of the ureteral catheter and the tests of the renal function, together with a more accurate knowledge of the pathology of renal tuberculosis, have reduced the operation mortality to 2 or 3 per cent.

## SURGICAL PATHOLOGY.

Renal tuberculosis is a disease of young adult life, and occurs most frequently between the ages of 20 and 40. It is rare in children, and in them is more frequently bilateral in the early stages. The disease is uncommon over 50 years, and at this age is more chronic than in middle life. The male sex is more frequently affected than the female in a ratio of about 2 to 1. In adults chronic renal tuberculosis is unilateral in from 80 to 90 per cent. of cases in the early stage.

### *Source and Route of the Infection.*

In the strict meaning primary tuberculosis of the kidney cannot be said to exist. A primary focus is always present elsewhere in the body, although it may not be discovered clinically. Braasch[2] places the coincident lesions discovered in 346 operated cases at 71 per cent. Others have found a lower proportion of coincident lesions in clinical work. Thus Persson[3] states the figure at 50 per cent., and in 193 cases operated on by myself 48.1 per cent. had evidence of obsolete tubercle elsewhere in the body.

A history of pleurisy and clinical evidence of obsolete pulmonary tuberculosis is common, while *post-mortem* evidence shows that tuberculous glands of the mediastinum are present in a large proportion of cases. Active pulmonary tuberculosis is found coincident with renal tuberculosis in a small number of cases (5.3 per cent.).

Tuberculous lesions—which must, equally with renal tuberculosis, be secondary—are found in other parts of the body. The exact relationship of these to the renal lesion is not always clear, but some of them may be the immediate source of the tubercle bacilli that infect the kidney. In order of frequency these are genital tuberculosis in the male and tuberculosis of bones and joints. In my cases submitted to operation there were tuberculous lesions of the epididymis in 23.3 per cent., of the prostate in 15.3 per cent., and of the seminal vesicles in 7.3 per cent.

There are three possible paths—namely, the ascending or urinary by the lumen of the ureter, the lymphatic, and the haematogenous.

There is experimental evidence that, under certain conditions, ascending infection by the lumen of the ureter may occur (Wildbolz[4]); there is histological evidence that lymphatic infection along the ureter may take place (Bauereisen,[5] Walker[6]); and there is pathological evidence that supports lymphatic infection from the thorax (Brongersma[7]). The weight of evidence at the present time supports the view that in renal tuberculosis the tubercle bacillus is blood-borne.

## VARIETIES OF RENAL TUBERCULOSIS.

It is possible to reduce the many varieties of renal tuberculosis that have been described to three: (1) miliary tuberculosis, (2) chronic renal tuberculosis, and (3) tuberculous nephritis.

### *Miliary Tuberculosis.*

This is an acute condition in which both kidneys are strewn with tubercles. It is part of a general tuberculosis, and is of no surgical interest.

### *Chronic Renal Tuberculosis.*

Under this head are included almost all forms of renal tuberculosis that come under the care of the surgeon. It includes the conditions known as apical tuberculosis, ulcero-cavernous tuberculosis, tuberculous hydronephrosis, caseous tuberculosis, nodular tuberculosis, and tuberculous abscess.

The first change, in the great majority of cases, takes place at the apex of a pyramid. There is a small loss of substance surrounded by a zone of inflammation. The ulceration spreads outwards towards the base of the pyramid, and a cavity communicating with the calyx is formed; the lining of the cavity is a layer of necrotic or caseating tissue. Beyond this is a zone of inflammation which may show grey tubercles, and occasionally there is a complete zone of grey gelatinous tubercles. Outward from the zone of inflammation isolated tubercles are dotted in normal renal tissue or arranged as one or more streaks radiating to the surface of the kidney. On the surface of the kidney groups of tubercles are seen in areas corresponding to the subjacent tuberculous pyramids. One or several, or all the pyramids may be affected in different degrees. Another pathological process may now become prominent: in the wall of the calyx at its neck, or the division of the pelvis at its outlet, or in the wall of the pelvis, fibrous thickening develops and contracts until the passage is finally occluded. If now the urinary secretion in the section that is gradually being occluded is maintained, a localized cyst or partial or total hydronephrosis develops. If, on the other hand, the secretion of urine is abolished, a caseous mass surrounded by fibrous tissue is formed and the whole kidney may be converted into a mosaic of these caseous masses. The ureter is greatly thickened and rigid in a large proportion of cases. There is ulceration, necrosis, and caseation of the mucosa, and tuberculous infiltration with the formation of thick layers of fibrous tissue in the middle and outer coats. Stricture formation may affect one or several parts of the tube, and dilatation of the tube occurs above.

### *Tuberculous Nephritis.*

In cases of pulmonary tuberculosis the urine may contain albumin and tube casts, and these may also be present in the urine of the second kidney in chronic renal tuberculosis. In the latter condition the symptoms usually clear up after removing the tuberculous kidney. This condition has been regarded as due to toxic nephritis, and *post-mortem* examination has shown that there was either interstitial or parenchymatous nephritis, but that tuberculous changes were absent. Recently Heyn[8] and others have described kidneys where nephritis of this character was present and tubercle bacilli were found in the kidneys without any specific tuberculous changes. In a woman, aged 37, I removed the left kidney for intermittent haematuria when no bacilli were present in the urine. The kidney was small and showed interstitial nephritis and minute cysts, and scattered throughout were giant celled systems. This case might be regarded as unilateral chronic miliary tuberculosis of the kidney.

## SYMPTOMS.

The symptoms of renal tuberculosis do not at first, and may not at any time, directly refer to the kidney. I have placed them in the order of frequency in which they occurred in the cases under my care: (1) bladder symptoms, (2) changes in the urine, (3) loss of weight, (4) haematuria, (5) renal pain, (6) palpable renal swelling and thickened ureter.

In the majority of cases irritability of the bladder with increased frequency of micturition is the first and for a long time the only symptom of which the patient complains. The irritability is slight and variable, depending on the weather and diet. It increases until urine is passed every twenty or thirty minutes day and night, accompanied by pain before and after micturition. The urine in the early stage is increased in quantity; it is pale, faintly acid or neutral, and contains albumin and a small amount of suspended pus and fine white flakes. In uncomplicated cases a few tubercle bacilli are found, but no other bacteria.

Slight terminal haematuria is frequently observed, and an attack of haematuria is occasionally an early symptom.

* A paper read in opening a discussion on this subject in the Section of Surgery at the Annual Meeting of the British Medical Association at Edinburgh.

Rarely, severe attacks of haematuria are a prominent feature. Continuous slight loss of weight is as a rule observed, but there is no rapid or severe emaciation in uncomplicated renal tuberculosis. Renal pain is usually insignificant, and may be entirely absent. With severe haemorrhage there may be ureteric colic from clots. Fever is absent in most cases, but a slight persistent rise of temperature to 99° or occasionally to 100° F. may be observed. A high temperature, if present, is a symptom of either a mixed infection or of general tuberculosis. The kidney is felt enlarged in a small number of cases of uncomplicated renal tuberculosis. Even when it is considerably enlarged it may be adherent high up under the diaphragm and not be felt.

A thickened tuberculous ureter may be detected on deep palpation at the level of the brim of the pelvis in a thin subject, on rectal examination in the male subject, or as a thick cord in the lateral fornix on vaginal examination. It is a characteristic of renal tuberculosis that the disease may have advanced so far as completely to have destroyed one kidney without causing symptoms that attract the attention of the patient. The symptoms may vary, and in some cases may disappear for considerable periods. In the majority of cases, however, the symptoms are slowly progressive.

### Spontaneous Cure and Closed Renal Tuberculosis.

A condition of clinical importance has received the name of "closed renal tuberculosis" or "autonephrectomy." The latter term is incorrect and unscientific. With this, and inseparable from it, must be discussed the question of spontaneous cure of renal tuberculosis.

A tuberculous lesion of the kidney may be arrested as the result of one of two processes—namely, (1) healing of the tuberculous lesion with disappearance of the tubercle bacillus and replacement of the ulcer by a scar, and (2) exclusion of the tuberculous focus by a ring of fibrous tissue.

1. I have searched for many years in the kidneys I have removed for tuberculous and other diseases for evidence of healing of a tuberculous lesion without destruction of the segment of the kidney affected or of the entire kidney. I have only met with one example, and this, although it appeared perfectly healed to the naked eye, still showed some giant cell systems microscopically.

In this case I removed the right kidney of a woman, aged 40, for acute haematogenous pyelonephritis due to staphylococcal infection. One of the pyramids in the middle third of the kidney showed the apex cleanly scooped out. The calyx was normal, and to the naked eye there were no signs of inflammation. The lining of the cavity was smooth. The pathological report was as follows: "The cavity which occupies the position of the apex of a calyx is in part lined by epithelium-like cells, but at one spot the lining is composed of granulation tissue in which a few giant cells are still to be found. Apart from this there is no evidence of tubercle."

2. The form in which the activity of a tuberculous lesion of the kidney is arrested by exclusion of the focus is not uncommon (10 per cent. of renal tuberculosis—Braasch[9]), and has received the clinical name of "closed renal tuberculosis." It was first described as a clinical entity by Zuckerkandl,[10] and later described fully by Smirnow.[11] I have seen three varieties of change in the kidney that have produced this clinical phenomenon—namely, (1) tuberculous hydronephrosis, (2) massive caseous tuberculosis of the kidney, and (3) occlusion of an ulcero-cavernous focus. The whole of the kidney, or only a part of it, may be affected by the closure.

#### *Clinical Aspect of Closed Renal Tuberculosis.*

In some cases of renal tuberculosis there has been bladder irritability for a time, but this has been neglected and has disappeared, and the condition known as closed renal tuberculosis, where the infected area is shut off from the urinary tract, has developed. No further symptom may arise, and the presence of a closed tuberculous kidney may be unsuspected during the life of the patient and be accidentally discovered after death.

The discovery of closed renal tuberculosis may be made during the routine examination of a candidate for life insurance, or during the investigation of some condition independent of the urinary disease. Examination of the urine and *x*-ray examination and cystoscopy are the methods by which attention is drawn to the renal disease. There may be albuminuria, or a trace of pus, or some red blood corpuscles, and the *x* rays may show the shadow of caseous masses in the kidney. The kidney may be enlarged, and a thickened ureter may be felt on abdominal, rectal, or vaginal palpation. Cystoscopy and chromocystoscopy show a closed and dragged out ureter. The discovery of closed renal tuberculosis on one side may be made during the examination of a case of tuberculosis of the other kidney.

When the closed focus affects only a part of the kidney the diagnosis becomes very difficult, and may be impossible apart from operation. The *x* rays and pyelography may, however, give information that leads to a diagnosis. Closed tuberculosis in one part of a kidney with active open tuberculosis affecting the remaining portion of the organ is not uncommon, and accounts for the variation and even temporary disappearance of symptoms.

A very important question arises in regard to these cases of "closed renal tuberculosis": Is the tuberculous infection of these kidneys permanently inactive, or is it still potentially active? Where one portion of the kidney is the seat of "closed tuberculosis" the remaining part of the kidney may continue to function and remain healthy, and at a later date become infected with tubercle. I removed a kidney where the upper one-third was a closed tuberculous hydronephrosis and the apex of one pyramid of the lower third showed early tuberculous ulceration. There had been a trace of pus but no bacteria found in the urine seven years previously. For nine months before operation there was loss of weight, pyuria, and tubercle bacilli in the urine.

Infection of the urinary tract may occur from a tuberculous focus which has been closed. In the following case the exciting cause of the reopening of the tuberculous focus was an injury.

A man, aged 40, had had haematuria fifteen years previously. Three weeks before I saw him he fell heavily down a flight of stairs. Six days later frequent micturition and haematuria suddenly developed and the urine was found to contain tubercle bacilli. The left ureter was oedematous, and near it was a small patch of tubercles.

Nephrectomy showed a large kidney converted into a series of round cysts, and at the lower pole there was a tuberculous cavity communicating by a narrow neck with the pelvis. Acute inflammation of the pelvic mucous membrane spread from this opening into the lower part of the pelvis and down the ureter.

Persson mentions a case where a fracture of the pelvis was followed by miliary tuberculosis and an autopsy revealed an unsuspected renal tuberculosis. Braasch investigated five kidneys the seat of closed renal tuberculosis by inoculation of guinea-pigs, and found that in four the tuberculous infection was dead; in one it was still active. Wildbolz found in the wall of a closed renal tuberculosis fresh tubercles in spite of the fact that the contents were sterile. In a case described by Kapsammer[12] spontaneous healing had lasted for many years, but eventually a perinephric abscess developed and caused death.

These cases show, and the experience of other observers confirms the view, that closed renal tuberculosis is a potential source of further infection.

### Diagnosis.

#### 1. *Symptoms.*

The spontaneous development of signs of cystitis insidious in its onset in a young adult suggests the presence of urinary tuberculosis. Discomfort, pain, and tenderness of the kidney, and enlargement of the organ, may be present. These symptoms do not, however, necessarily prove that this kidney is tuberculous or that the other kidney is healthy. The symptoms may arise in a kidney which is hypertrophied and healthy or recently infected with tubercle when the other kidney has been destroyed by tubercle without any symptoms being noticed by the patient.

#### 2. *Aseptic Pyuria and Albuminuria.*

Where there is pyuria and the urine is sterile it is practically certain that tuberculosis is present. Pus may be absent in closed renal tuberculosis. Albuminuria is a constant symptom, and its absence will raise a doubt as to whether tuberculosis is present even when other signs point to the condition.

### 3. *The Tubercle Bacillus.*

The discovery of the tubercle bacillus is the final proof of urinary tuberculosis. The proportion of cases in which the bacillus is found in the urine is given by Persson as 85 per cent., by Beer[13] as over 70 per cent., and by Wildbolz as 90 per cent. Hattinger[14] found the bacillus forty-two times in the first smears and six additional times in second smears, and only failed in four cases. The tubercle bacillus is usually present in small numbers, and there may be a difficulty in finding it, so that repeated examinations are required. Hyman and Mann[15] state that large numbers of bacilli are more likely to be found in the earlier than in the later stages of the disease. Animal inoculation should always be made where a doubt exists.

In regard to the discovery of the tubercle bacillus in urinary tuberculosis we must contemplate two possible conditions: (*a*) the tubercle bacillus is not demonstrated but the symptoms point to tuberculosis; (*b*) the bacillus is demonstrated but other proofs of tuberculosis are wanting.

#### (*a*) *The Tubercle Bacillus is not Demonstrated.*

Failure to discover the tubercle bacillus in the urine does not exclude urinary tuberculosis. In 295 cases of proved tuberculosis of the kidney Persson found that the tubercle bacillus was demonstrated microscopically in 78.3 per cent. and by guinea-pig inoculation in a further 7.1 per cent.—in all 85.4 per cent. of cases. In 193 cases in which I performed nephrectomy for renal tuberculosis the tubercle bacillus was found in the urine in 155 (80.3 per cent.). There are several reasons for the failure to demonstrate the tubercle bacillus in 20 per cent. of cases of renal tuberculosis. The search must be made by a competent bacteriologist, and much time and care must be spent on it; the number of bacilli may be very small and their appearance in the urine intermittent; repeated search in specimens taken at different times is therefore necessary. Again, the tuberculous focus may be shut off from the urinary tract (closed tuberculosis); when the renal lesion is closed but there is tuberculous ulceration of the bladder repeated examinations frequently fail to discover the tubercle bacillus, and the same may be true when tuberculous ulcers persist in the bladder after nephrectomy. Finally, the tubercle bacillus may not be pathogenic to the guinea-pig. Cases of renal tuberculosis in man have been described by Löwenstein[16] and Joannovic where the bacillus of fowl tubercle has been found. This type of tubercle bacillus is non-pathogenic to guinea-pigs. Hryntschak[17] ascribed the failure to discover the tubercle bacillus to this cause in some cases of human tuberculosis of the kidney.

In cases where the tubercle bacillus is not demonstrated in the urine the diagnosis may be made by the symptoms, the presence of tuberculous lesions elsewhere in the body, and especially in the male genital system, the discovery of a thick ureter, the demonstration of *x*-ray shadows thrown by caseous masses in the kidney, or by the help of cystoscopy. In 38 of my 193 cases the tubercle bacillus was not found in the urine, and the diagnosis was made by the cystoscope in 30 of these (15.5 per cent.).

#### (*b*) *The Tubercle Bacillus is Present in the Urine.*

The demonstration of the tubercle bacillus in the urine is usually regarded as diagnostic of tuberculous disease of the urinary tract. The tubercle bacillus may be discovered in the urine when no other symptoms of urinary tuberculosis are present—a condition termed "tuberculous bacilluria."

In such cases the question arises whether a lesion of the kidney insufficient to give rise to symptoms exists, or whether it is possible for tubercle bacilli to pass through the kidney without producing a focus of tuberculous disease.

Foulerton and Hillier[18] were the first to show that tuberculous bacilluria without a tuberculous lesion of the kidneys might occur in cases of pulmonary tuberculosis. Kielleuthner[19] confirmed the observations of Foulerton and Hillier, and proved that in his cases no genital source for the bacilli existed. Hobbs[20] found tubercle bacilli in the urine of 6 per cent. of phthisical patients. Kielleuthner found that in all cases where a tuberculous bacilluria was present there was albumin in the urine, and other observers have noted the presence of albumin and tube casts.

It seems probable, therefore, that a non-specific nephritis is present in all cases where tuberculous bacilluria is found. The bacilluria in these cases is probably not continuous, and may have a short duration. Nitch relates a case where tuberculous bacilluria was found in clear urine, and continued for two and a half months and then ceased, and the patient was well eleven years later.

The presence of the tubercle bacillus in the urine cannot of itself be regarded as a proof of tuberculous disease of the kidney. In clinical work the additional proof required of a tuberculous lesion in the kidney is the presence of pus in the urine. When pus is present, even in microscopic amount, it is proof that there is a tuberculous lesion; where it is absent and closed tuberculosis can be excluded there is no surgical tuberculous lesion of the kidney.

### 4. *Complement Fixation Reaction.*

Dr. Megumi Takahata[21] has recently reviewed the value of the complement fixation reaction of the urine in urinary tuberculosis, and found this test accurately indicated the affected kidney in unilateral renal tuberculosis. Kilbane used the von Pirquet test and found it positive in 8 out of 10 cases of renal tuberculosis. In the great majority of cases the accurate methods of diagnosis render these tests superfluous, but cases may occasionally arise where the complement fixation test may be of value.

### 5. *Cystoscopy.*

It is frequently possible by means of the cystoscope alone to diagnose renal tuberculosis. Changes easily recognized by the trained observer occur at the ureteric orifice and in the bladder. In 30 of 193 cases in which I performed nephrectomy for renal tuberculosis the diagnosis was made by the cystoscope, search for the tubercle bacillus having failed. Space does not permit of a description of the cystoscopic appearance in the bladder.

While examination of the ureteric orifice usually gives definite information as to the presence of tuberculous disease of the corresponding kidney, there are cases where this may be unreliable. The ureteric orifice may be normal when the kidney is infected, and, on the other hand, the ureteric orifice may be involved in an area of tuberculous inflammation of the bladder, and the kidney be free from disease.

The observation of a stained ureteric efflux by cystoscopy after injection of indigocarmine (chromocystoscopy) has little value in deciding whether the kidney is tuberculous. A deeply stained efflux may be seen when the kidney is infected.

### 6. *Catheterization of the Ureters.*

By catheterization of the ureters a specimen of urine is obtained from each kidney. If one ureteric orifice is definitely tuberculous only the apparently healthy side need be catheterized, but where a doubt exists both ureters are catheterized. The urine so obtained is examined for (1) the presence of the tubercle bacillus, (2) other bacteria, and (3) the functional power of the kidney.

There are cases of advanced tuberculosis of the bladder where the ureteric orifices are involved in the inflammation and ulceration, and it is impossible to pass a catheter into the ureter. Several courses are open to the surgeon. He may await improvement in the bladder condition under the influence of tuberculin. This is problematical. The bladder may be opened and the ureters catheterized through the cystotomy wound. I have found this a difficult and unsatisfactory method with little advantage over cystoscopy. Bilateral nephrotomy is recommended by some surgeons. In practice the method is not satisfactory. A tuberculous lesion situated at the apex of a pyramid is difficult—and may be impossible—to see when the kidney is opened by nephrotomy. The damage to the kidney is a grave disadvantage when its neighbour is tuberculous.

Fullerton[22] recommends that the ureter should be exposed at the brim of the pelvis by a muscle-splitting operation in the lower iliac region. The ureter is incised and a catheter passed up to the kidney and a specimen obtained, after which the wound in the ureter is closed with fine

catgut. If the ureter is found diseased it is not opened. I have used this method in a number of cases and found it extremely valuable. The exposure is not difficult, and I have had no trouble with healing after the operation.

### 7. *X-ray Diagnosis.*

According to Braasch[23] 20 per cent. of cases of renal tuberculosis have positive *x*-ray data of definite diagnostic value. Small irregular shadows may be found in the kidney area. They are thrown by caseous areas in a tuberculous kidney and are sometimes confused with stone shadows. The outline of these shadows is irregular and the density low and uneven. A heavy uniform shadow is thrown by a caseous mass in the kidney. In massive caseous tuberculosis of the kidney there is a closely set mosaic of rounded or oval shadows.

A thickened tuberculous ureter containing caseous material sometimes throws a shadow. Pyelography is occasionally used to estimate the extent of the tuberculous disease. The outline of the affected calyx or group of calyces is enlarged, blurred, and indefinite, and the pelvic outline may be irregular and the cavity dilated. It is only justifiable in rare cases.

## Treatment.

The modern treatment of renal tuberculosis is nephrectomy in all cases where the second kidney is healthy and no definite contraindication exists. This treatment is based on three postulates of the surgical pathology of chronic renal tuberculosis:

1. Tuberculosis of the kidney is a progressive disease.
2. Tuberculosis of the kidney is unilateral in the early and bilateral in the late stage.
3. Removal of the tuberculous kidney prevents in most cases the infection of the second kidney.

Space does not permit of further discussion of these points.

As regards operation only nephrectomy need be discussed. Partial nephrectomy has been abandoned on account of the difficulty of ascertaining on the operation table how far the disease has invaded the kidney. Nephrotomy is only performed when nephrectomy is impossible.

### *Indications and Contraindications for Nephrectomy.*

1. *Extra-urinary Tuberculous Disease.*—Obsolete tubercle in other parts of the body (lungs, spine, or joints) is no contraindication to nephrectomy and has no adverse effect on the after-history of the case. When active tuberculous disease of bones or joints is present operation on the kidney should be postponed until the extra-urinary tubercle has been successfully treated. Where active tuberculous infection of the lungs is present operation on the kidney is contraindicated. Tuberculosis of the male genital organs (epididymis, prostate, and seminal vesicles) does not contraindicate nephrectomy. In several cases I have removed both epididymes, the prostate and the seminal vesicles, and the kidney with complete success.

2. *Bilateral Renal Tuberculosis.*—The removal of the kidney in which the disease is more advanced in bilateral tuberculosis is advocated by some surgeons. According to those surgeons active hyperaemia of the remaining kidney follows nephrectomy, which increases the resistance to the tuberculous infection. The tuberculous lesions become more localized and there is a greater tendency to connective tissue formation. In some cases cure of the condition is claimed.

Ekehorn[24] in bilateral renal tuberculosis exposed both kidneys and removed the more diseased of the two. In 20 cases the immediate result was diminution of pain and pyrexia. Subsequently 10 died, 5 were still alive, and 5 not traced. Two of the survivors were free from pain and able to work twelve years after operation, and a third five years after operation.

Braasch[3] reports 13 deaths within one and a half years following nephrectomy in 16 patients with bilateral disease. In a series of 62 bilateral cases Israel[25] found about 70 per cent. had died shortly after the nephrectomy.

The immediate post-operative mortality of nephrectomy in bilateral tuberculosis varies from 66 to 80 per cent., and the benefits gained in the few surviving cases have not been permanent. The procedure is only justified in the most exceptional cases where one kidney is proved to be the cause of profound toxaemia and the other kidney is in the earliest stage of tuberculous infection.

### *Technique of Nephrectomy.*

The technique of nephrectomy for renal tuberculosis requires no description, but some points call for comment.

#### 1. *The Treatment of the Ureter.*

Many methods of dealing with the tuberculous ureter have been used.

(1) The ureter is cut across below the kidney, the end seared with the cautery or with pure carbolic acid, and dropped back into the retroperitoneal space. In addition pure carbolic acid is injected into the ureter.

(2) The ureter is cut across below the kidney and the end sutured to the skin in the lumbar wound, or is brought up to the surface inside a drainage tube and fixed there.

(3) The kidney and ureter are removed by the lumbar-iliac incision (nephro-ureterectomy).

(4) The kidney is removed by the lumbar incision and the ureter cut across. A second small incision is made in the inguinal region through which the ureter is removed.

A ureter fixed in the lumbar wound retracts and infects the wound with tubercle. The injection of pure carbolic acid is not likely to destroy the tuberculous infection of the ureter and is somewhat dangerous.

In some patients it is possible to remove the ureter through the lumbo-iliac incision, suggested by Morris, but in the majority of cases it is not possible to remove the whole length of the ureter as far as the bladder by this incision. A stump of varying length is left attached to the bladder. The same limitations attend the removal of the ureter through a small incision in the iliac region.

The method that I have practised for many years, and that I have found satisfactory, is to remove the ureter as far as the brim of the pelvis through the lumbar wound, sear it with the cautery or with pure carbolic acid, ligature, and drop it into the retroperitoneal space. The patient is re-examined in six months, and if there is reason to believe that the disease is still active in the ureter and is infecting the bladder, extraperitoneal ureterectomy is performed through a median suprapubic incision. The cases in which ureterectomy is advisable are those where there is stricture at the lower end of the ureter and dilatation of the duct. The proportion of cases in which this is required does not exceed 8 per cent.

#### 2. *Closure of the Lumbar Wound.*

In the majority of cases of nephrectomy for renal tuberculosis I close the wound without drainage at the end of the operation. Drainage may be necessary on account of oozing or of infection of the perinephric tissues with tubercle or other bacteria. Where all cases are drained a sinus persists in some, and may take months to heal. Infection from tuberculous deposits in the perinephric fat may be the cause of the sinus, but it is usually due to a mild post-operative staphylococcal infection.

Legueu[26] has shown that tuberculous deposits are found in the perinephric fat, and it is suggested that the fatty layer should be removed with the kidney. This is easy in the early stage of the disease, but impossible in advanced tuberculosis where there are masses of perinephric fat extending under the diaphragm.

It is an occasional experience to find that the wound heals completely by first intention, and a few weeks later one or more weak spots appear in the scar. These are small superficial areas of tuberculous infection, and should be treated by scraping, the application of iodine, and the administration of tuberculin.

Thévenot[27] describes a complete breaking down of the wound from tuberculous infection (*tuberculisation totale*), of which he has collected 11 examples. I have seen one case of this nature in which, after the wound had eventually healed, the patient died of general tuberculosis four months after the nephrectomy.

### *Effect of Nephrectomy on Tuberculous Infection of the Bladder.*

A temporary increase in the bladder symptoms is not uncommon immediately after nephrectomy. Tuberculous cystitis and ulceration gradually subside, and the bladder eventually becomes free from tuberculous infection. Where the bladder infection was of comparatively recent date the

bladder symptoms entirely disappear and the full capacity of the organ is restored.

Where tuberculous cystitis has been established for some time the bladder seldom regains its full capacity after the cystitis has disappeared, and a frequency of two hours becomes permanent. Tuberculous cystitis and ulceration may persist for some years when the whole of the renal and ureteral infection has been removed. The urine in such cases may be clear and contain no tubercle bacilli and only microscopic pus.

The treatment of the bladder after nephrectomy for tuberculosis consists in the administration of soothing drugs, such as sandalwood oil, and the administration of tuberculin. Washing of the bladder had better be avoided, for it does not affect the tuberculous process and may cause a mixed infection. I have not seen any permanent benefit from the injection of strong solutions of mercury perchloride or carbolic acid. Cauterization of a tuberculous ulcer with the high-frequency cautery (étincillage) has been recommended by Heitz Boyer[28] and others, and is likely to be of assistance when the ulceration is superficial and limited.

### *Operation Mortality.*

The operation mortality has fallen during the last twenty-five years, and statistics which include only cases of comparatively recent date have the benefit of more accurate methods of diagnosis, improved technique, and the fact that patients are now referred to the surgeon at an earlier stage of the disease than heretofore.

Persson calculated his operation mortality in 205 cases treated during thirty years as 7.3 per cent., whereas the 85 cases operated on in the last five years showed only 4.7 per cent. mortality.

The following are some recent series of cases:

| | Cases. | Mortality. |
|---|---|---|
| Suter (1923)[29] ... ... ... | 204 ..... | 2.5 per cent. |
| Ferria (1923)[30] ... ... ... | 89 ..... | 6.5 ,, |
| Wildbolz (1924)[4] ... ... ... | 500 ..... | 2.4 ,, |
| Hogge (1924)[31] ... ... ... | 100 ..... | 7.0 ,, |
| Gayet (1924)[32] ... ... ... | 100 ..... | 5.0 ,, |
| Judd and Scholl (1924)[33] ... | 863 ..... | 2.7 ,, |
| Persson (1925)[3] ... ... ... | 205 ..... | 7.3 ,, |
| Condamin (1926)[34] ... ... ... | 172 ..... | 2.9 ,, |
| Young (1926)[35] ... ... ... | 112 ..... | 0.89 ,, |
| Thomson-Walker (1927) ... ... | 193 ..... | 2.5 ,, |

### *Late Results.*

The late mortality of cases of renal tuberculosis where nephrectomy has been performed, if intercurrent disease be disregarded, depends upon tuberculous infection of the second kidney and tuberculous disease elsewhere in the body. Infection of the second kidney may have been present at the time of the operation, or the kidney may be infected later from the original source of the tubercle. When complete investigation of the urine of the second kidney is carried out by animal inoculation the risk of this is very small. It is more likely that infection of the second kidney is derived from the original source at the time or soon after the operation.

The number of cases in which the patient dies of general tuberculosis is considerable. Persson points out that acute miliary tuberculosis occurs twice as often during the first six months after the operation as in the total of the following years.

Of 193 patients on whom I performed nephrectomy for renal tuberculosis 5 died and 188 recovered.

Of the 188 survivors I was able to trace 111 and failed to obtain information in regard to 77.

Of the 111 survivors there are 67 well and without any symptoms of urinary disease at periods varying from 1 to 22 years after the operation (60.3 per cent.).

The period that had elapsed since the nephrectomy in these cases was: 1 year in 10, 2 years in 9, 3 years in 4, 4 years in 1, 5 years in 1, 6 years in 7, 7 years in 4, 8 years in 4, 9 years in 3, 10 years in 5, 11 years in 2, 12 years in 4, 13 years in 3, 14 years in 4, 15 years in 4, 16 years in 1, and 22 years in 1.

There were 25 patients (22.5 per cent.) who were in good general health but still had bladder symptoms. In some cases the frequent micturition was due to permanent contraction of the bladder without tuberculous disease; in other cases there was persistence of the tuberculous infection. The period of time that had elapsed since operation in these cases was 1 year in 6, 2 years in 5, 3 years in 1, 4 years in 2, 5 years in 3, 6 years in 1, 7 years in 4, 9 years in 1, 12 years in 1, 20 years in 1.

Thus there were 92 out of 111 cases traced (82.8 per cent.) where the patient was in good general health at periods varying from 1 to 22 years after the removal of the tuberculous kidney.

Of these 92 cases, 35 had been operated on three years or less from the time of the inquiry, and in 57, or 61.9 per cent., 4 years or more had elapsed since the operation. Of the 111 cases, the remaining 19 cases (17.1 per cent.) had died since the operation, 4 from intercurrent disease (2 one year and 2 twelve years after the operation) that had no relation to tuberculous disease, and 4 from unknown causes, but probably from tuberculous disease in some form (2, 3, 6, and 10 years after the operation). The remaining 11 cases died of tuberculous disease: 6 from general tuberculosis (2 one year, 1 two years, 2 three years, 1 eight years), 2 from tuberculous disease of the second kidney (3 and 7 years), and 3 from tuberculosis of the lungs (2, 4, and 8 years).

Of the 19 patients that died after the operation 11, or 57.8 per cent., died during the first three years. This agrees with the observations of Israel and of Persson, who found that 50 per cent. of the late mortality occurred during the first three years after the operation.

The late mortality from tuberculous disease of the remaining kidney in my cases is small—namely, 2 in 19 cases, or 10.5 per cent.

General tuberculosis caused death in 6 cases (31.5 per cent.), and 5 of these deaths occurred within the first three years. Tuberculosis of the lungs accounted for 3 deaths, 2 of which were in the second and fourth years respectively.

The following are some of the statistics of the late results:

| Surgeon. | Cases Traced. | Dead. | Completely Well. | Improved but not Completely Well. |
|---|---|---|---|---|
| | | Per cent. | Per cent. | Per cent. |
| Persson ... ... ... | 182 | 24.7 | 57.1 | 5.8 |
| Suter ... ... ... | 197 | 29.9 | 41.6 | 25.3 |
| Judd and Scholl ... | 611 | 31.0 | 58.6 | 10.0 |
| Nitch[36] ... ... ... | 48 | 12.0 | 52.0 | 35.0 |
| Wildbolz ... ... | — | 19.4 | 61.5 | — |
| Thomson-Walker ... | 111 | 17.1 | 60.3 | 22.5 |

### *Non-operative Methods of Treatment.*

I have treated a number of cases of renal tuberculosis with tuberculin (Koch's new tuberculin T.R.) without operation. These were cases where the patient refused operation or where the disease was bilateral and operation was contraindicated.

In adults I have seen no case of cure with tuberculin. There was frequently amelioration of the symptoms and improvement of the general health for several years, but the tuberculous disease persisted. In one child with bilateral tuberculosis the symptoms vanished, the general condition steadily improved, and pus and tubercle bacilli disappeared from the urine. In another boy the symptoms improved and the patient gained weight, but the tubercle bacilli and pus in the urine persisted and the tuberculous cystitis was unchecked.

In all cases of renal tuberculosis I give a course of two years of tuberculin T.R. after nephrectomy. This has a beneficial effect on the tuberculous infection of the bladder, and is given also with the hope that the primary focus of infection in the mediastinal glands or elsewhere will be influenced by it.

### *Sunlight and the Ultra-violet Rays.*

Tuberculosis of the kidney cannot be cured by exposure of the patient to sunlight. I have seen a number of cases where this form of treatment has been used, but in none of these has there been the semblance of a cure. Cases have been recorded where the pus and tubercle bacilli have disappeared from the urine for some years after this treatment. Our knowledge of the pathology of renal tuberculosis shows that temporary occlusion of a tuberculous focus may take place without this treatment, but that sooner or later the tuberculous disease progresses and destroys the kidney.

The temporary improvement that may take place from treatment by sunlight unfortunately encourages the patient to resist operation or to postpone it, and thus much valuable time is lost.

Heliotherapy is a valuable method of treatment after operation for tuberculosis of the kidney, and it has also a useful field in cases where operation is contraindicated.

In an inquiry among the physicians of Switzerland, Wildbolz found that of 316 patients suffering from renal tuberculosis not operated upon 31.3 per cent. died within the first two years of the disease, and 27.2 per cent. within three to five years. More than half (58 per cent.) died within the first five years, and only 20 per cent. were alive after five years.


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## STATISTICS OF POST-OPERATIVE SURVIVAL IN RENAL TUBERCULOSIS.*


BY

ANDREW FULLERTON, C.B., C.M.G., M.D., M.Ch., P.R.C.S.Irel.,

Professor of Surgery, Queen's University, Belfast.


When a patient is brought to the surgeon for renal tuberculosis two questions obtrude themselves: (1) Is the lesion confined to one kidney? and (2) Is cure without operation possible?

Recently I set out to investigate a series of 158 cases of tuberculosis of the bladder seen over a period of twenty years. It was found to be very difficult to trace these cases, but some useful information was obtained. One of the objects of the investigation was to compare the results of operation, when the kidney was affected, with those obtained by other measures, among which the most important and the most popular was the use of tuberculin.

Of the 158 cases there was definite evidence of kidney involvement in 141. In the remainder evidence was wanting—either on account of the difficulties associated with ureteral catheterization, or because, in the early days, it was assumed, probably without sufficient justification, that the bladder condition was secondary to involvement of the epididymis, prostate, or vesiculae. Further observation has shown that tuberculosis of the sexual organs frequently coexists with or follows renal tuberculosis. Thus there were 87 males in the series, and in no fewer than 29—that is, in one-third—there were deposits of tubercle in the prostate, epididymis, or vesiculae. In only 7 out of the 141 cases was there definite evidence, at the time of my examination, of a bilateral lesion—that is, in about 5 per cent.

In all cases an attempt was made to find a primary focus. A previous history of some tuberculous lesion was obtained in 26 per cent., and in 15 per cent. a focus was found at the time of examination in some part of the body outside the genito-urinary tract. In many cases, no doubt, hidden foci were present in glands, bones, etc., but they were not sufficiently obvious to arrest attention during an ordinary clinical examination. This leads me to say that I have frequently been struck with the apparently robust health which many patients the subject of urinary tuberculosis enjoy. Many go on for years with much inconvenience and suffering before the general health becomes seriously impaired.

As opposed to the views I have long held regarding the localization of the infection to one kidney, and the prospects of cure without operation, a recent paper by Gilbert J. Thomas and Thomas J. Kinsella[1] is very interesting and instructive. These authors have conducted a research in a well equipped sanatorium in Minnesota for the treatment of tuberculosis. Their conclusions include the following:

They argue that tissue destruction with renal tuberculosis is a late lesion, and that this is the lesion most frequently seen by the surgeon. They bring evidence to prove that early renal tuberculosis may end in arrest or cure. They believe that tubercle bacilli are carried to the kidney by the blood stream, and that every renal infection with tubercle bacilli must be primarily bilateral. One kidney may not overcome the infection so well as its mate, and a destructive lesion develops. They have never been able to demonstrate a case of excretory bacilluria. They have never removed a kidney which eliminated tubercle bacilli that did not contain a lesion of tuberculosis, though in some instances serial sections were necessary before the lesions could be found. Repeated urological examinations revealed many cases of unsuspected renal tuberculosis among their patients, nine-tenths of whom had active pulmonary lesions.

I have had very little opportunity of examining patients representing this class of case. Those who have been referred to me have had what these authors term "tissue destruction," and in the large majority, as I have stated, I have been unable to find evidence of bilateral infection. It is quite true, of course, that the absence of pus and tubercle bacilli in the specimen obtained by ureteral catheter from a kidney is not conclusive proof of its freedom from disease. Foci may be present in the cortex, for instance, and may not communicate with the pelvis, or an abscess in the parenchyma may be shut off, only discharging into the pelvis at intervals; but the difference between the urines excreted by the diseased kidney and by the presumably sound kidney has been, in my experience, so definite and decided in almost every case examined that I cannot come to any other conclusion than that the disease is unilateral, clinically, at any rate, in the cases coming under my observation. The specimen obtained from the affected side, besides containing pus and tubercle bacilli, is, in nearly 100 per cent. of the cases, of a low specific gravity. In the early cases the low specific gravity is associated with an increased flow, which may be termed unilateral diuresis. In the later stages the urine, though still of low specific gravity, may become diminished in quantity, until finally no fluid at all is secreted, and the discharge from the kidney may be represented by a semi-solid ointment-like material; or the ureter may become impervious, and all connexion between the affected kidney and the bladder cut off. The low specific gravity in the late cases is due to renal insufficiency, a condition which it may be possible, by chemical analysis, to distinguish from the hyperactivity seen in the early stages.

I have been able to demonstrate by repeated ureteral catheterization in cases of renal calculus that pure reflex unilateral diuresis occurs, with low specific gravity, and dilution of the specimen from the affected side, and that, on removal of the cause, the rate of flow, the specific gravity, and the composition of the urine rapidly return to normal, and become identical on the two sides.[2]

A similar diuresis occurs in the early stages of tuberculosis, and appears to be due to reflex vaso-dilatation, in contradistinction to the vaso-constriction which gives rise to reflex anuria—a condition well known to occur in certain cases of calculus.

My colleague Dr. Mayrs of Queen's University, Belfast, has recently made analyses of the urines of 35 patients under my care with various unilateral kidney disorders. These analyses have been carried out in order to ascertain whether ureteral catheterization can throw any light on

* A contribution to a discussion on renal tuberculosis in the Section of Surgery at the Annual Meeting of the British Medical Association, Edinburgh, 1927.

the nature or extent of the renal impairment. Reflex diuresis must be distinguished from renal insufficiency, as in many cases dilution results from increased rate of excretion alone, and it is in trying to recognize the distinctive characteristics of these two conditions that the fundamental difficulty is encountered. Owing to possible leakage past the catheters the volumes of urine from the two kidneys cannot always be compared with sufficient confidence to justify a positive diagnosis of unilateral diuresis, while, even if the occurrence of diuresis has been satisfactorily established, more serious impairment of function is not excluded.

A method of attacking the problem is to compare the concentration of various substances (chloride, urea, phosphate, creatinine) in the urines secreted simultaneously by the two kidneys. But although this has been done in numerous cases the results fail to give all the information required, because we are not quite sure what alteration in the ratio of creatinine to urea, for example, should normally result from an increase in the rate of flow, when this is the only variable factor. At the same time, a careful study of such changes is not without value. Probably chloride excretion will afford the most reliable distinction between diuresis and insufficiency, but a good deal of work remains to be done. It is a general principle that in diuresis the composition of the urine approaches more nearly to that of the plasma, and hence, if the diuresis is unilateral, the chloride concentration of the urine on the affected side should be closer to 0.6 per cent. NaCl than that from the normal kidney. An increase or decrease of chloride concentration may thus result, which can be interpreted by comparison with the chloride content of the normal urine; the latter being above or below 0.6 per cent. according to whether the excess of chloride in the organism is large or small. On the other hand, in renal insufficiency the chloride of the urine is always low, and often considerably lower than that of the plasma.

The object of these remarks on low specific gravity is to stimulate research, so that it may, perhaps, be possible, from an examination of the specimens from both kidneys, to state what degree of disorganization has taken place in a kidney affected with tuberculosis, should the surgeon be tempted to give a trial to non-operative methods of treatment.

There is another point to which I would like to direct special attention, and that is the fallacies and difficulties associated with ureteral catheterization. The introduction of a ureteral catheter may upset the sphincteric mechanism of the ureteral orifice, and may thereby give rise to erroneous conclusions, and, in addition, may entail some risk of infection of the sound kidney.

A girl, aged 23 years, was cystoscoped, and catheters were introduced into both ureters. A small number of pus cells were found on the right, or presumably sound, side. The examination was repeated and the bladder was emptied during the collection of the ureteral specimens. That on the right was scanty in quantity, clear amber in colour, had a specific gravity of 1010, and was free from pus. That on the left was copious, pale, and cloudy, had a specific gravity of 1005, and contained many pus cells. Fluid was now introduced into the bladder through the cystoscope. After a few ounces had been injected the patient began to complain of pain on the sound side, and immediately a quantity of watery fluid appeared as a distinct layer, supernatant to the amber fluid previously obtained. The fluid in the bladder had evidently reached the pelvis of the kidney past the ureteral catheter, and had found its way out again, through the lumen of the latter, into the collecting test tube. On removing the fluid from the bladder clear amber urine was again obtained from the ureter of the sound side.

The significance of this from the point of view of diagnosis, and of possible infection of the sound kidney by ureteral catheterization, is obvious. I make it a rule now to empty the bladder before commencing to collect the ureteral specimens.

Again, in a certain proportion of cases it is impossible to catheterize the ureters. This is due to extensive ulceration, and great irritability of the bladder. Attempts to persist in cystoscopy may cause much bleeding and straining, and are not devoid of risk. It is for these cases that I have suggested and carried out retroperitoneal catheterization of the ureters by open operation.[3] The ureter may be exposed by stripping inwards the peritoneum after an incision in the parietes similar to that used for appendicectomy. In tuberculosis of the kidney if a thickened ureter be found on one side it ought not to be disturbed, as the small puncture made to receive the ureteral catheter may not heal, and may persist indefinitely as a fistula. On the sound side with careful technique and accurate suturing there need be no extravasation of urine.

Instead of introducing a catheter, the needle of a small exploring syringe may be used, and the wall of the ureter punctured, just as is done in withdrawing blood from a vein. To facilitate collection of the specimen, the distal part of the ureter may be lightly clamped, so as to allow urine to collect in the proximal portion. This procedure should eliminate all risk of leakage, especially if the puncture be made obliquely through the wall of the ureter. By operative ureteral catheterization the exact amount of urine secreted by a kidney can be ascertained. The specimens so obtained are free from the risk of contamination by reflux of the bladder contents, and the operation is safer than sustained attempts to distend an ulcerated bladder.

I have used this method when, after careful search, the opening of the ureter in the bladder could not be found, and in one such case—a case of tuberculosis of the kidney—no ureter could be discovered on the opposite side, even after operative exposure of its normal position in the iliac region. This patient had only one kidney, which was tuberculous. In several other cases I have found a thickened and impervious ureter, demonstrating the final stage of the process of auto-nephrectomy, which is responsible for many of the so-called cures without operation.

### Technique.

In my most successful cases I have removed the kidney and as much of the ureter as I could reach through the lumbar wound. I have made no elaborate attempt to dissect out completely the perirenal fat. I have not found it necessary or desirable to dissect out the ureter. Indeed, I have only done this in two cases, and one of my worst results was in a case so treated. Some months after the operation urine began to leak from the stump of the ureter at its junction with the bladder, into the wound, which, after having healed by first intention, had opened up. This patient died seven and a half months after operation from uraemia, following an operation by another surgeon to repair this leak. The removal of infected glands surrounding the pedicle of the kidney close to the spine is attended with risk. A large blood vessel, such as the renal vein or the vena cava, may be injured. I do not say that these glands ought not to be removed, if possible, but I have often left them untouched when closely bound down in an inaccessible position, without any obvious disadvantage to the patient.

As a rule the wound in the parietes has been sutured without drainage. In a few cases a drain was left in for twenty-four hours. In some cases the wound broke down at one or more points a month or more after operation, after having healed by first intention. Final healing was the rule, after the sinus or sinuses had lasted for periods varying from a few months to a year or more.

I have tried all the recognized methods of dealing with the ureter at the point of section. My present practice is to inject with a hypodermic syringe pure carbolic acid into the lumen over an area of an inch or more before ligaturing and dividing the ureter. Catgut has been used in all cases for securing the pedicle and for the deep sutures, and silkworm gut for the skin.

### Statistics.

Nephrectomy was carried out in 73 out of the 141 cases of renal tuberculosis. Five died as the result of operation—a mortality of 6.8 per cent. All the deaths occurred in the first 35 cases, the remaining 38 being without operative mortality. I have been able to follow up 55 out of the 68 survivors. Fifteen have since died, four of them after long periods of complete relief. Thus one died, 12 years after operation, from what was called a "cerebral attack"; one 9 years after, from cerebral haemorrhage; one 8 years after, from acute pneumonia; and one 9½ years

after, from gangrenous cystitis, probably non-tuberculous. All the cases enjoyed good urinary health in the intervals. This leaves 11 cases dying as the result, probably, of a continuance of their tuberculous infection. Thirty-one of the survivors are described as being well—one 20 years after operation, two 17 years after, one 16 years after, one 15 years, one 14 years, one 11 years, one 9 years, one 8 years, two 7 years, three 6 years, one 5½ years, one 5 years, three 4 years, one 3½ years, two 3 years, two 2½ years, four 2 years, and three cases from 6 months to 1 year after operation. Including the four patients who died from other causes, eight years or more after operation, we have a total of 35 out of 55 apparently cured of their urinary symptoms—that is, over 63 per cent. Of the nine survivors who cannot be claimed as cures, one still has frequency and wears a urinal, though otherwise in good health, 12 years after operation. One has frequency 7 years after operation—his lungs are now said to be affected; one is said to be fairly well 5 years after operation, but he now has deposits in his epididymis, and is said to be suffering from spinal caries; one has still frequency and wears a urinal 6½ years after operation; one still has frequency 2 years after operation, and deposits have appeared in epididymis and prostate; one still has frequency 2 years after operation; one still has frequency 1 year after operation; one is much improved, but not quite well, 1 year after operation; and one is much improved, with apparently normal urine, 4 months after operation.

Contrast with these the reports received of those treated by medical means, of which tuberculin was the one most frequently used. I have only been able to trace 41 out of the 68 cases not subjected to operation. These were of the usual type, and (except in 5 or 6 advanced cases) operation was not contraindicated when the patients were first seen. Of the total, 26 are dead—that is, 63 per cent. One lived for 17 or 18 years after the onset of symptoms, and died after the removal of a calculus, which had blocked the ureter of the affected kidney, and mushroomed into the bladder. One lived for 16 years. Fourteen died in from 2 to 6 years; three in from 1 to 2 years; and seven within a year after the onset of symptoms. Of the fifteen living, one is certainly well 13 or 14 years after the onset of symptoms; the urine is free from pus and tubercle bacilli; the condition of the affected kidney has not been ascertained. Another is well and free from urinary symptoms 5 years after they first appeared. The ureter of the affected kidney was exposed, and was found to be converted into a thick fibrous cord. There was no trace to be seen of its orifice on cystoscopic examination. These are the only ones, two in number, that I know of, who are really well. Of the remainder, one has carried on fairly well, with symptoms, for 16 years; another similarly for 15½ years, and a third for 13 years. In none of these three cases was ureteral catherization carried out. Deposits were present when first seen in prostate, vesiculae, or epididymis, and in all three tubercle bacilli were found in the urine. The diagnosis of kidney involvement was made by cystoscopic examination of the ureteral orifices. One early bilateral case is reported to be well except for an occasional "turn" of frequency, 7½ years after the onset of symptoms. Lastly, in the other survivors, symptoms remain 5 years and under from the onset of their illness.

These statistics support the contention that, with our present knowledge, operation remains the most hopeful method of treatment in tuberculosis of the kidney. If done early, before deep ulceration has taken place in the bladder, relief is often immediate. Even in late cases, if the other kidney is sound, the patient may still be cured. Deep ulceration of the bladder, and the presence of tubercles in that organ—a late occurrence in my experience—render the prognosis less hopeful, especially as regards the relief of frequency of micturition. Even if healing takes place, the scarred and contracted bladder is unable to expand, and the patient is obliged to empty it at frequent intervals.

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[1] *Journ. of Urol.*, April, 1927, p. 395. [2] See British Medical Journal, February 2nd, 1924, p. 188. [3] *Brit. Journ. of Surg.*, vol. xii, No. 46, 1924.

Discussion.

Dr. A. Rollier (Leysin) thought that heliotherapy could play only a subsidiary part in the treatment of renal tuberculosis. In every case of unilateral disease he advised nephrectomy as soon as the diagnosis was established, but heliotherapy was indicated as a pre-operative treatment for patients whose condition was bad, since it improved the general and tissue resistance, thus helping to prevent tuberculous infection of the wound. It was also useful in all cases of unilateral disease when the cystoscopic and functional examinations left any doubt about the integrity of the other kidney. Heliotherapy could be employed with benefit when the seminal glands, and particularly the prostate, were the seat of extensive disease which compelled the postponement of cystoscopy owing to the risk of trauma of the prostate, with the consequent danger of general infection. As a post-operative treatment it helped to prevent the infection of the wound, and assisted cicatrization of infected wounds. In bilateral renal tuberculosis heliotherapy was the treatment of choice, since it limited the extension of the lesion and diminished the pain of bladder ulceration. To be efficacious heliotherapy must be conducted with rigorous technique and special adaptation to the needs of the patient. It should be associated as often as possible with graduated labour.

Mr. Henry Wade (Edinburgh) described a series of seventy-eight cases in which he had operated. He thought that the diagnosis could be made independently of the demonstration of the presence of tubercle bacilli in the urine, and that frequently an *x*-ray examination would clear up the diagnosis by revealing calcification. Pyuria without organisms in the urine and diminution of the bladder capacity were very characteristic. On cystoscopy the "golf-hole ureter" was diagnostic. He performed a bilateral catheterization and a bilateral pyelography. The pyelogram might show the drainage system of one part of the kidney to be normal and the other part excavated; irregular contractions and dilatations of the ureter were pathognomonic of tuberculosis. He had never obtained spontaneous clinical cure nor *post-mortem* evidence of healing, and therefore regarded nephrectomy as the correct treatment. Two of his seventy-eight patients had died. After an operation the ulcers in the bladder usually disappeared. If there was any frequency left, it was due usually to the small size of the bladder. The frequency and inability to dilate were sometimes due to a single remaining ulcer, the excision of which would bring about a rapid cure. A superadded streptococcal infection was very difficult to eradicate.

Mr. J. F. Dobson (Leeds) referred to cases where it was impossible to tell by cystoscopy whether the disease was unilateral or bilateral, and catheterization by the ureters was impossible. Opening the bladder suprapubically would not help in the difficulty, but Mr. Fullerton's method of exposure of the ureters in the iliac regions was of immense assistance. Mr. Dobson said that he had modified the method; he exposed the ureters and found that it was possible to tell from their appearance, state of dilatation, peristalsis, and feel of the walls whether the corresponding kidney was diseased or healthy. It was unnecessary to open the lumen of the ureter. He had used the procedure with satisfaction in four cases of advanced disease when cystoscopy was unable to furnish the required information.

Mr. Bernard Ward (Birmingham) based his remarks on a series of 57 cases. He believed that tuberculous infection started in the papillae, and that the upper papillae were affected more often than those in the lower part of the kidney. No operation should be undertaken unless the disease was limited to one kidney. A diseased kidney often secreted a large quantity of urine, and its removal threw a greater strain on the remaining organ which accelerated any disease present in it. The only certain method of diagnosis was to draw off urine from the infected kidney by the catheter. His custom was to estimate the combined renal function by means of the urea concentration

and blood urea tests, with chromocystoscopy, using indigo-carmine injection, and to catheterize the ureteric openings. The last method was sometimes sufficient in itself by revealing the presence of pus cells in the collected specimen. He had found spinal anaesthesia a great help in performing cystoscopy; it did not interfere with renal function and gave greater relaxation of the inflamed bladder than the deepest general anaesthesia. He refused to operate upon patients with active disease elsewhere in the body, whether in the lungs, bones, or joints; mild infection of the genital tract, however, was not a bar to operation. He resected as much as he could of the ureter at the primary operation, since he had found that high division of the ureter often left a tuberculous fistula. In one case a pyonephrosis was removed unopened, but the whole wound broke down and took two years to heal; he thought infection had come from the perinephric tissues. If frequency remained after six months the patient was cystoscoped and any chronic ulcers treated by operation. In only 37 of his 57 cases of renal tuberculosis had nephrectomy been performed, with one death from miliary tuberculosis a few weeks later. He had traced 30 of these operation cases and found that 4 patients had since died. Of the remaining 26, 20 were apparently quite well and earning their own living, 6 were unable to earn their living, and one of these developed spinal caries and a psoas abscess, but was now getting about. Of the 26 patients still alive, one was operated on 15 years ago, one 12 years, one 11 years, two 8 years, three 5 years, five 4 years, five 3 years, and eight were operated on 2 years to 18 months ago.

Mr. Temple Mursell (Johannesburg) emphasized the importance of a thorough investigation of all cases of pyuria, as otherwise cases of tuberculous kidney would be overlooked until they had become advanced. He had never seen a patient cured without operation, though improvement sometimes occurred and persisted for as long as ten years. Early nephrectomy, followed by heliotherapy, gave the best results. He did not remove the whole ureter. Tuberculin was of great value in reducing residual bladder symptoms.

Mr. Gordon Craig (Sydney) had seen two cases of renal tuberculosis cured without operation. One patient had bilateral disease and a tuberculous tarsus; the latter was treated surgically. Tuberculin was administered, and now, fifteen years later, cystoscopy of the patient revealed no signs of disease. He recommended epidural anaesthesia for cystoscopy.

Sir John Thomson-Walker, in reply, said that he could not agree with Mr. Dobson that it was possible to deduce the state of the kidney from inspection of the ureter. Nor did he agree with Mr. Wade's method of diagnosis by pyelography. He said that clinical cures of tuberculosis of the kidney were always suspect; pathological recovery was very rare indeed. Indigocarmine injection was unreliable as a test for kidney function. The removal of the perinephric fat in advanced cases was impossible, and removal of much of the ureter was unnecessary. He did not recommend phenol injection of the ureteric stump, for the drug did not reach the thickness of the wall where the infection lurked.

# DUTIES OF THE STATE IN RELATION TO THE NATION'S FOOD SUPPLY.

## RESEARCH ON NUTRITIONAL PROBLEMS.*

BY

EDWARD MELLANBY, M.D.Cantab., F.R.S.,
Professor of Pharmacology, University of Sheffield; Honorary Physician, Sheffield Royal Infirmary.

Some of those interested in this discussion must have wondered what exactly the officers of this Section of Preventive Medicine had in their minds when they used the words "What duties has the State?" Did they mean by "duties" obligations imposed at the present time by Act of Parliament? If so, the discussion resolves itself more or less into a recital of those official activities which bear on the subject of nutrition and feeding. It must be assumed that this is not wanted, but rather the consideration of the problem as to what an ideal State should do in regard to carrying out research in nutritional matters, in the instruction of parents, in maintaining food supplies, and providing cooking facilities.

In the first place it may be worth while to consider whether feeding problems are a profitable field for Government activity. Nobody would deny that State and local government interference in matters of health, especially as it is affected by sanitation and drainage, water supply, and limitation of spread of infectious disease, has been of untold benefit to the community. Is it likely that a similar interest in feeding will be followed by beneficial results of a commensurate order? Some may think not, but for myself, and speaking probably for all those in touch with modern work on nutrition, I should say that the outcome of a sane and forceful effort on the part of imperial and local governing bodies in this field would lead to as revolutionary a change in the general health of the community as has followed their work on matters of public hygiene.

In a sense the problem of correct feeding is even of a more fundamental nature than that of general hygiene, for whereas it is possible to bring about good health and perfect development under bad hygienic conditions so long as the food eaten is very good, when the diet is defective the most perfect hygiene as we know it will not prevent bad physical development, ill health, and early death. Good hygienic conditions may for the moment be described as those conditions which reduce the chance of infection by micro-organisms, but nothing has been more prominent in recent work on feeding problems than the part played by correct feeding in increasing the individual resistance to infection. It is true that our knowledge of this problem is of an elementary nature, but the subject is one of active interest at the moment, and further facts of great importance will no doubt come to light very soon. I need only allude to the recent accumulation of facts showing the importance of vitamin A in increasing the resistance of the animal to inflammatory conditions of the respiratory passages and lungs as a forerunner of knowledge on the relationship between diet and resistance to infection. But apart from this large question of the relation of feeding to infection, there remain the purely metabolic disorders which are brought about by incorrect diet; among these may be instanced the bone deformities and the defective dental structure and growth of jaws which follow deficient vitamin D intake, the symptoms of scurvy due to deficient vitamin C, the nervous symptoms due to deficient vitamin B, the goitre due to deficient intake of iodine, the stunted growth due to deficient intake of biologically good proteins, and the ill effects of excessive and unbalanced cereals. These are some of the more recently established facts, and, even if they are not greatly extended in the near future, they are sufficiently important in themselves to justify the belief that it is certainly a most profitable line along which the activities of the State should be directed and hastened. The question now arises as to the methods to be adopted for the acquisition and diffusion of new facts concerning nutrition, and the relation of these facts to the public weal.

With regard to research on nutritional problems, the machinery, or at least a skeleton of the machinery, is present in the Medical Research Council. Since this body was set up a large part of its activities have been directed to the solution of nutritional problems. It was a most happy occurrence for the progress of nutritional studies that the Medical Research Committee was appointed soon after the enunciation of the vitamin problem, and that

*A paper read in the Section of Preventive Medicine at the Annual Meeting of the British Medical Association at Edinburgh in introducing a discussion entitled "What duties has the State in relation to the nation's food supply regarding research, instruction of parents, maintenance of supplies, and cooking facilities?"

Sir Frederick Gowland Hopkins, one of the original and present members, should have played the leading part in this work. It is true that at that time nobody could foresee what an extraordinary part the vitamins were playing in the production of disease common in this country, but at least the field was set and all the circumstances were propitious for the rapid accumulation of facts which followed.

The Medical Research Council has always been ready to support work on nutritional problems to the limit of its meagre resources. Unfortunately its limited income is not the only drawback to rapid progress in this part of its work, for the field of workers upon which it can draw is very small. Work of this type does not attract young men, and even those who have found themselves in this field have often arrived there by accident. There are many reasons for the lack of popularity of this kind of investigation, but probably the greatest of these is the spirit of scepticism and even hostility which has surrounded the subject of feeding, especially as it concerns vitamins. Many of the established physiologists and pathologists of this country have not only failed to see the scientific and practical significance of the new dietetics, but have been sceptical and often even hostile as to the existence of these substances. The popularity of the subject among the general population and the uncritical way in which vitamins have been discussed have only made the atmosphere which surrounds nutritional investigation worse.

It is possible to foresee the end of this period of unpopularity, as even the scientist with the longest latent period cannot fail to be aroused by recent work on the antirachitic vitamin and its photosynthetic production by the action of ultra-violet radiations on ergosterol. These recently discovered facts must tend also to focus the attention on particular problems and prevent the loose thinking and talking that is so widespread in matters dietetic. The facilities for nutritional investigation, or at least financial facilities, have been recently greatly extended by the formation of the Empire Marketing Board. The liaison between this body and the Medical Research Council is to be highly commended, and it is to be hoped that attention will not only be given to technical problems connected with storage and transmission of food, but that an eye will be given to the more academic problems of diet which form the fundamental basis for all future advances in knowledge as to the relation of feeding and health.

Interwoven with the advances in knowledge of nutrition is the problem of animal feeding, attention to which is being given by the Board of Agriculture, whose financial resources as compared with those of the Medical Research Council are very great. Speaking as one whose time has been largely occupied in investigating problems which are certainly as important from an agricultural as from the human aspect, I have a strong feeling that the interrelationship between nutritional research as carried on in the university laboratories of this country not primarily devoted to agriculture and that of the Board of Agriculture is not so close as it ought to be.

On the whole, so far as matters of research in nutritional problems are concerned, it is probably safe to say that the official machinery of this country is well established and likely to grow from strength to strength. Care must be taken that, as it grows, co-ordination of the work grows with it, so that not only should there be a rapid diffusion of new facts as they come to light and a limitation of unnecessary overlapping, but, what is of supreme importance, individual workers should be able to take up quickly the newer and often better point of view as it becomes established. Better co-ordination and more intimate knowledge of each other's work would not only result in more rapid progress, but would greatly reduce the hostility, too often encountered, where one group of workers decries the results of another group. The antagonism to Lister's teaching of antisepsis is only one instance of what is far too common in this country.

So far as the acquisition of new facts on nutritional matters is concerned, things are, on the whole, well; but what about the mechanism for the dissemination of this knowledge and for making full use of it? Here again the mechanism is at hand in the form of the Ministry of Health and the Board of Education. The first of these bodies has its nutritional advisers among its officers, and in recent years has undertaken a large number of tasks which involve advice in feeding and the dissemination of knowledge of dietetics. I need only mention the establishment by local health authorities of maternity and child welfare centres. The Ministry of Health also has its Research Department, whose activities are, however, more concerned with the investigation of technical points concerning foodstuffs than with the acquisition of more fundamental facts.

It is evident that the State has some machinery for directing the dissemination of knowledge of nutrition as it is acquired, and the question must now be faced as to whether this mechanism is satisfactory, and, if not, how it can be improved. It is an easy matter for an outsider to criticize and suggest improvements, but before venturing to do so I should like to pay tribute to the excellent work now being carried out by the Ministry of Health and educational authorities along these lines. Nobody has a greater admiration for the civil servant of this country than I have, and this admiration extends as much to the Ministry of Health as to other governing bodies. At the same time it is perfectly certain that knowledge of dietetics is greatly in advance of the application of this knowledge and the adoption of its teachings by official authorities. The reason for this is easily understood. Government officials must play for safety, and the greatest crime in their eyes is to make a statement one day which has to be retracted at a later period. However valuable their teaching might be in other respects, a mistake is unforgivable, so that their advice must be limited to what is considered as generally accepted. This means a latent period of many years as regards most discoveries. Their task is not lessened, so far as dietetics is concerned, by the multitudinous teachings of experts and so-called experts. What, for instance, is an official to do when faced with the many suggestions as to the dietetic means of saving the race which fill our daily papers? These suggestions are not only multitudinous but are often contradictory. They represent the views of a few who know, more who half know, and many who are entirely ignorant of the subject. The average intelligent reader smiles and rejects the lot.

Nothing is more clear than that any system must be inefficient which leaves discussion as to active policy in matters of dietetics to one or more officials whose time is largely taken up with administrative work. How to improve the situation is difficult to suggest. One obvious and essential method would be to appoint a Board of Nutrition to make recommendations to the executive officers of the Ministry of Health. This Board should consist largely of active workers on nutrition with experience of both animal experiments and the feeding of human beings. They should be chosen on the basis of their work only, and no question of representation of learned societies or of particular parts of the kingdom ought to receive consideration. It should be the duty of those members not only to sift the evidence as they read it, but to keep in touch with all those actively engaged on nutritional investigations. Speaking as a laboratory worker I am sure that a good welcome will be given to any official body whose object it is to find out the latest trend of experimental results. As it is, practically the only officials concerned with nutrition who ever visit my laboratory are those from other countries than my own, and I expect my colleagues engaged in this type of work have the same experience. In their active experimental work many investigators are years ahead of their publications, and I consider the direct personal contact with research in progress is a most important function of any official body engaged in advising a Government department. It is at least as important, to my mind, that the Ministry of Health should have a strong and representative body of nutritional experts as it is for the Treasury to have its financial experts, or for the War Office to have its Army Council.

Assuming that we had an efficient method of acquiring new knowledge on nutritional matters, and one by which the Ministry of Health received the best and the latest

advice as to the relative importance of new discoveries, the question now arises as to how such information should be dealt with so that the average citizen could profit thereby. For some people an official announcement of the facts is sufficient, especially if the pronouncement is given with adequate authority. What a boon it would be at the present time, for instance, if out of all the multitudinous teachings presented to us as regards feeding a really authoritative body issued a reasoned statement declaring the relative importance of all the points raised. While such a statement would influence many people, we must not delude ourselves into thinking that it would convince any large section of the population. I can speak with feeling on this point. It is now five years or more since I published the fact that cereals, and especially oatmeal, will, in the absence of sufficient vitamin D, interfere most potently with calcification processes and the general health, but those who realize this are very few in number, in spite of the fact that the evidence is open to anybody to examine. Prejudice and ignorance—both absolute ignorance and ignorance of the value of the scientific method—can only be overcome by time.

Another method by which the Ministry of Health could, if given the necessary authority, greatly increase its effectiveness would be to assume greater control over the feeding arrangements in all institutions run by State aid. I refer particularly to Poor Law institutions, prisons, welfare centres, and similar bodies. Sometimes the sole controlling factor in the minds of the governing bodies is the question of cost of the food, although this is by no means always the case. I do not think any local authority need fear a great increase in cost if the feeding were controlled by a wise body of experts representing the Ministry of Health. At the same time I am convinced that the results of the improved health and physique which would follow the adoption of the latest facts of nutritional science would amply repay both any possible increase in cost and any interference of the central dietetic authority.

I can imagine many medical men being alarmed at the suggestion that the Ministry of Health should advise in the feeding of children at welfare centres, but I am sure from my own observations that this would be highly efficacious in many cases—again not in all, for medical attendants at welfare centres are often very alert to new facts regarding nutrition, sometimes even too alert and uncritical, especially where patent foods are concerned.

One other suggestion can be made which would greatly facilitate the working of an authoritative body dealing with nutrition. I refer to the necessity of some scheme for standardizing foods and other preparations for their vitamin content. I am aware that this has recently been boldly tackled—much to their credit—by the Pharmaceutical Society of Great Britain in their new standardizing laboratories. This attempt should be officially encouraged to the utmost extent, and, if the methods which are developed prove satisfactory, it should be as much the duty of the Ministry of Health to adopt these by legislation as it is their present duty to test foods for their purity. It ought to be impossible in the near future for people to put on the market preparations about which claims as to their vitamin content are made unless these have been officially tested.

To sum up, I suggest that the following steps should be taken by the State in order to strengthen the control and executive power of the Ministry of Health in matters of nutrition:

1. That the Ministry of Health should set up a Board of Nutrition consisting largely of experts actively engaged in nutritional research, whose main duties would be: (*a*) to examine the results of the investigations carried out by those researching for the Medical Research Council, the Board of Agriculture, the Empire Marketing Board, and all others engaged in this field, both by studying their published work and, as far as possible, by personal contact with the actual investigations; (*b*) to advise the Ministry of Health to take action along lines which appeared to them advisable; (*c*) to recommend, or even to initiate, research on practical points where there is any obvious hiatus of evidence.

2. That the necessary authority be given to the Ministry of Health, acting on the recommendation of its Board of Nutrition, (*a*) to control the feeding of Poor Law institutions and prisons, and to advise in others, such as welfare centres or wherever public grants are made; (*b*) to publish authoritative statements, and, if necessary, give the evidence for such, on feeding matters to the general public; (*c*) to set up or control a food analysis department which includes not only the testing of food as at present carried out, but the standardizing of foods and other preparations for their vitamin content.

None of these suggestions is revolutionary, and they are only developments of practices at present in use. They would raise the status of nutritional matters to a level compatible with its importance to the nation. They would hasten the adoption of the teachings of dietetics discovered during the past twenty years. They would lead to untold benefits to the health of the community.

### *The Instruction of Parents.*

This, I imagine, would be part of the duties of the Ministry of Health, acting on the advice of its Board of Nutrition. It is probable that official statements made to the press would be the most important method of teaching the facts to the average parent. At the present time this work is being attempted by several well meaning health societies, whose members have a strong conviction that diet is a very important subject, but whose knowledge of the facts is often lamentable. These societies would no doubt continue their well intentioned efforts, but their knowledge of the subject would be greatly enhanced and their teachings correspondingly influenced by the official statements of the Ministry of Health. All the numerous public lectures on diet at present given throughout the country would be similarly influenced. The teachings would be unified and the wheat of the subject separated from the chaff. The present method, which seems to be growing in popularity, of issuing manifestos to the press on dietetic subjects, is altogether wrong. These statements are often partisan in their origin and are frequently signed by men who, however distinguished they may be in their own lines, cannot possibly have any real knowledge of dietetics. The Board of Nutrition must supersede these well meaning efforts by better methods.

### *Maintenance of Supplies.*

If by this is meant the maintenance of sufficient food in the country to supply the necessary amount of energy and protein for each individual in a position to buy it, then it would not appear desirable for the State to take any action except in times of national emergency, as in war, especially war accompanied by blockade. On the other hand, if it means the maintenance, and increased facilities for obtaining special foods and the limitation of others, it is probably a line of action that may prove useful.

The trend of scientific work on nutrition is to divide foods roughly, from the point of view of disease, into three classes: (1) "protective" or disease-preventing foods; (2) harmful or disease-producing, or, probably better, "protection-demanding" foods; and (3) neutral foods. Among the first, or protective foods, would be placed milk, eggs, green and other vegetables, fruit, cheese, meat, and fat fish. In the second, or disease-producing foods, are cereals and cereal products, including bread of all kinds (white flour or wholemeal flour), maize, oatmeal, rye, rice. The third, or neutral group of foods, would probably include sugar, pulses (peas and beans), pork and bacon, and white fish. These are tentatively arranged, and it might be desirable with further knowledge to redistribute the members of group (3) among groups (1) and (2). For instance, the way in which sugar seems to upset experimentally fed dogs suggests that under some conditions it is a harmful food, and if there were any lack of vitamin B in the diet pulses would then pass into group (1) among the protective foods. It may be necessary to point out that the inclusion of cereals and cereal products among the

harmful foods does not mean that these substances are devoid of nutritional properties. They have many excellent qualities in this respect, and their harmful effects can be readily antagonized by some of the members of group (1), or protective foods. At the present time, however, a sufficiency of "protective" foods is often not eaten, and poor physical development and bad health result in many individuals.

In view of these facts it would be desirable for our hypothetical Board of Nutrition to consider whether it was necessary for the Ministry of Health to take steps to make the "protective" foods—milk, cheese, butter, eggs, fat, fish, etc.—more easily procurable by increasing the supplies. It would probably be undesirable at the present time to limit the quantities of the "harmful" group—that is, cereals—available, for these are the cheapest procurable foods and form the basis of the average diet in the country, and especially in view of the fact, as stated above, that they can be made innocuous.

In one other respect—namely, the maintenance of pure food, both as regards micro-organism contamination and admixture with chemicals as preservatives—the State is already active. All of us commend this work and would like to see it strengthened, especially as regards the supply of pure milk. The widespread sale of milk contaminated with tubercle bacilli is a moral and economic disgrace to the country. I think it is time the community faced the probability that the sale of milk bacteriologically clean will be an uneconomic proposition, and it only remains to be determined whether the improvement in health and physique accompanied by some monetary loss is more desirable than widespread tuberculous infection and large monetary profit. A time may come when knowledge of the factors controlling resistance to infection will be sufficiently definite to make it a matter of indifference whether milk is infected with tubercle bacilli or not. Or it may be that an adequate substitute for milk, cheaper and more easily controlled, will be discovered. This time, however, is not yet, and it is important that one of the best "protective" foods in the dietary should be so controlled as to lead to the larger consumption of a purer and better product. It would be a bold and excellent thing if some city or town would purchase and run its own herd of cows with the object of supplying its citizens with good, clean milk. Any small financial loss would be amply repaid by the improved health and increased feeling of security of the community.

Whereas the economic side of food supplies must obviously always be one of vast importance, the question of personal profit plays far too great a part in feeding arrangements. This is beginning to be recognized by the setting up of the Food Council to investigate the relation of cost of food to wholesale and retail profits. As time goes on the importance of the question of private profit and food wangling will be more and more recognized, and State schemes for meeting the situation will undoubtedly be developed. It is neither desirable that any particular food should be reduced in or eliminated from the diet under the influence of private individuals and companies, nor that it should be foisted on to the public by other individuals for similar reasons. Both of these actions are possible. An example of the first of these is seen in the gradual reduction of an excellent food in the dietary of this country in the case of fish, apparently as the result of methods of sale employed by fish retailers. An example of the second type can be seen in the tremendous consumption of pig products and veal in Germany, as the result of the discovery by a strong agrarian movement that the production of these foods is a sounder economic proposition than the production of beef and mutton. If big dietetic changes are desirable they should be controlled by the State, each case on its own merits, after the best advice has been taken from both a nutritional and a financial standpoint.

### *Cooking Facilities.*

This part of the problem involves a discussion as to whether it is desirable for the State (*a*) to play a greater part in the teaching of cookery, and (*b*) to provide means of cooking food for public consumption. I imagine that greater facilities for the teaching of cookery will be provided by local authorities as the demand for such by the public increases. Better education and greater realization of the importance of proper feeding will no doubt hasten this demand.

The second point—namely, the provision of means of cooking food by the State—seems to me of greater interest. It would certainly be a method by which many individuals would obtain not only better cooked food, but also one by which they would have the chance of getting a greater variety of more wholesome food. The modern practice of consuming great quantities of preserved foods, the large trade carried on by cookshops in poorer areas, the increasing opportunities afforded for the purchase of expensive cooked foods, seem to indicate the desirability of the setting up of public and official organizations whereby people can obtain food already prepared for consumption either at home or on the premises where cooked. Experience of this type of organization was obtained during the war, and no doubt others will be in a better position for expressing an opinion as to the desirability or not of the State taking up this matter.

### *Summary.*

1. Increased interest of the State in nutritional matters is very desirable, and would lead to untold benefit to the community even if only the knowledge of dietetics already established were utilized.

2. The mechanism for State research on nutrition is already well established in the Medical Research Council, the Empire Marketing Board, and the Board of Agriculture, but greater activity and closer co-ordination of the investigators is necessary.

3. The present interest and powers of the Ministry of Health should be greatly extended, and the first step in this direction ought to be the setting up of a Board of Nutrition consisting largely of people actively engaged in nutritional research with knowledge and experience of the scientific feeding of human beings and animals.

4. The Ministry of Health, acting on the advice of its Board of Nutrition, should (*a*) control the feeding of Poor Law institutions, prisons, welfare centres, and other organizations where public money is spent; (*b*) issue dietetic instructions to the public, and, where necessary, give the evidence upon which these instructions are based; (*c*) consider the advisability of controlling food supplies, and especially of increasing the availability of the "protective" foods to the public.

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### Discussion.

Dr. Eustace Hill (C.M.O., Durham) agreed that careful attention to diet as a result of a sane and helpful effort on the part of central and local governing bodies would lead to an improvement in the general health equal to that which had followed the attention paid to general hygiene. He quoted a remark of Professor McCallum of Baltimore, to the effect that the chief factor in human deterioration in recent times was the unwise choice of food. He cordially supported the recommendation to set up a Board of Nutrition to advise the Government. He did not, however, think that the issue of official statements to the press would be the most effective method of instructing the average parent. There would have to be more personal and intimate touch with the individual. There was an undoubted need for increasing the supply and cheapening the distribution of important foodstuffs, especially fish and vegetables. At present terrible waste occurred owing to the inordinate profits of middlemen and the preference of retailers for large profits on a small turnover to small profits on a large turnover. The development of allotments and the practical instruction of allotment holders would bring about a valuable improvement in the supply of vegetable foods. He also agreed that the making of a profit out of milk contaminated with tuberculosis was a disgrace to the community, since such milk was not only the cause of very many deaths, but of an amount of pain and misery that could not be computed. He was convinced of the need for additional cooking facilities in industrial districts—a need that was demonstrated by the excess of fried-fish shops in such localities.

Dr. J. P. KINLOCH (M.O.H., Aberdeen) took the point of view of the health visitor, with especial reference to the instruction of parents and cooking facilities. A fundamental duty of the health visitor was the prevention of the incomplete conclusions of research workers, not infrequently recorded in the public press, being adopted by the housewives of the country, to the great prejudice of the population generally, and the infant population in particular. This point was illustrated by the attack made recently on the oatmeal diet, which, Dr. Kinloch remarked, when balanced with vegetables and milk, ensured normal growth without rickets. An important duty of the State, as represented by the local authority, was to convey through health visitors reliable information to housewives concerning the nature of the food that should be purchased and the manner in which the food should be prepared; they had also to teach mothers what was an adequate diet for a child and for an adult. There had been a large increase in milk consumption in the United States during the last two years, due to the efforts of health and education authorities. It seemed essential for the health of the community that information should be given, especially to mothers, on the kind of food required to maintain health, especially in cases of infants and children; on ways of keeping food to prevent contamination; on varieties of cooking; and on the method of serving and its psychological effect on appetite and digestion. Girls should be taught the elementary principles of dietetics as part of the school curriculum.

Dr. GERALD LEIGHTON (Scottish Board of Health) insisted that the production and distribution of food was a business; and the extent to which there should be interference with private enterprise was always difficult to define. The State should to some extent regulate (1) the raw material, whether animal or vegetable, from which food was derived; (2) the surroundings in which they were grown; (3) the handling of these materials by people who used hygienic processes; and (4) their distribution to consumers in a clean and sanitary way. The State had already done much on these lines in connexion with the protection of the milk supply, the limitation of preservatives in food, and the Meat Regulations. Dr. Leighton believed that there had been more progress in the improvement of the milk supply during the last five years than there had been in the previous fifty, and he was optimistic about the future. The regulations controlling preservatives in food had already caused a great improvement in many foodstuffs, and the inspection of meat was now better than it had ever been. All these were examples of State interference which had been more than justified.

Sir GEORGE NEWMAN (Ministry of Health) briefly described the action which the State already took in regard to the problems of nutrition. He agreed that nutrition lay at the foundation of the national health. There was abundant evidence that the nutrition of the people was improving; in fact, there was probably no greater recent social advance in any other sphere. He illustrated the activities of the State by five examples: (1) recent legislation for the safeguarding of food supplies; (2) the existence of a special food department at the Ministry of Health; (3) the co-ordination now existing between different central and local authorities; (4) the work of the Medical Research Council and other departments; and (5) the educational work in hygiene which was aided by the State. Much depended on the medical practitioner, who had the best opportunity of teaching the people to rely less on bottles of medicine and more upon suitable nutrition.

Dr. A. S. M. MACGREGOR (M.O.H., Glasgow) said it was difficult to extract from the conflicting views of the experts on nutrition any clearly ascertained facts for presentation to the public as to what constituted a well balanced diet. There were still differences of opinion, for instance, as to the best method of feeding young children, and he found it hard to believe that Professor Mellanby could be serious in his attack on oatmeal. It must, however, be agreed that great improvements in the food of the people had followed recent legislation. The reduction in the incidence of abdominal and glandular tuberculosis in Glasgow was probably associated with the increasing freedom of the milk supply from tubercle bacilli.

Professor MELLANBY, in reply, said that his views were based on facts definitely ascertained by experiment. If people opposed to such facts their own predilections or preconceived opinions founded only on casual observation, he could not be much impressed. If anyone would demonstrate by a different or better series of experiments that his conclusions were false, he would be prepared to reconsider the whole of his previous work.

# Memoranda:

## MEDICAL, SURGICAL, OBSTETRICAL.

### A COLOUR TEST FOR RADIO-SENSITIVE SUBSTANCES.

I THINK that a short preliminary note on a new colour test for radiated ergosterol and certain other radio-sensitive substances may be useful to other workers in this field.

A small quantity of crystalline ergosterol is rubbed with a heated glass rod on a previously warmed microscopic slide, on which a thin, translucent, and adherent band of the rubbed crystals is thus formed. Half the slide is then exposed to the rays from a mercury vapour lamp (Hanovia) for half an hour at 12 inches, the other half of the film being protected from the rays. The whole film is then covered with starch solution which has been boiled in water to which about 5 per cent. of potassium iodide has been added. The boiled starch and potassium iodide solution is then applied hot to the film. After a short incubation period, varying from ten minutes to three-quarters of an hour, depending on the amount of radiated sterol present, and the concentration of the potassium iodide in the starch solution, the film of ergosterol on the radiated half of the slide assumes a rich pink colour, in consequence of the dissociation of the potassium iodide and the fixation and retention of the iodine as a starch iodide on the radiated sterol smear. If the film so treated is then irrigated with distilled water the pinkish-brown colour will change into the characteristic blue colour of iodized starch.

The test is a delicate one, and may be used to reveal the presence of very small amounts of radiated ergosterol; thus it shows the different intensity of radiation in ergosterol radiated through water and in the air. Some samples of cholesterol fail to give the test.

A considerable number of films of different sterols and other fatty substances have, so far, been tested with this iodine-starch test. Among these the pink colour changing to blue on irrigation with water has been obtained in definite amounts on the radiated half of the film in samples of egg yolk, coco-nut stearin, cream, and certain other fatty substances.

In an address "On the effect of certain radiated sterols on the cellular constituents of the blood" to the Physiological Section at the Leeds meeting of the British Association, I described an *in vitro* physiological test which depends on the haemolytic effect produced on a suspension in normal saline solution of washed red cells by contact with radiated but not with non-radiated ergosterol. The starch-iodine colour test is a further development of this investigation, and will, I hope, prove useful in demonstrating the presence of certain radiated fatty substances without the necessity for resort in all cases to lengthy feeding experiments. The two tests afford mutual confirmation from different points of view.

Leicester. C. J. BOND, C.M.G., F.R.C.S.

### FOREIGN BODY REMOVED FROM EAR AFTER THIRTY-THREE YEARS.

THE following record may be of some passing interest. A woman, aged 45, complained of deafness. On examination she was found to have wax in both ears. From one ear, as well as wax, a rounded hard black body was recovered, which had the appearance of a pea. She stated

that at the age of 12 (thirty-three years previously), when indulging with some other children in the sport of putting peas up her nostrils and in her ears, she found she was unable to retrieve one she had placed in her left ear. She was taken to a doctor on the following day, who discredited the story, but told her father to put warm oil drops into the meatus. From that time until now she had consulted no one about her ears, had not noticed any deafness, and had put the whole incident at the back of her mind. This story was confirmed and amplified by her father. On more minute examination no doubt existed in my mind as to the foreign body in question being a pea, its pericarp and cotyledons (if these be the correct botanical terms) being complete with the exception of one small area.

Banbury. C. J. L. Wells, B.M., B.Ch.Oxon.

## SEVERE NEO-NATAL HAEMORRHAGE ARRESTED BY CALOMEL.

In view of the recent correspondence on blood transfusion in haemorrhagic diseases of the newly born the following case is interesting, for it shows an extremely severe condition cured by a comparatively simple measure.

The wife of a miner gave birth to a son, her ninth child, on the afternoon of April 28th, 1927, after a normal labour lasting about six hours, a midwife being in charge. The baby was thin and rather undersized, but apparently normal and perfectly well until the next afternoon, when it suddenly vomited about two tablespoonfuls of bright red blood and almost immediately passed a similar quantity, also bright red, by the rectum. The child seemed very collapsed, and the midwife sent an urgent message for medical assistance.

On arrival the child was practically *in extremis*; the pulse was barely perceptible, the skin chilly and distinctly blue, small quantities of blood mixed with tiny clots were gushing frequently from the mouth, the child's clothes and napkin being pretty well saturated. So ill did the child seem that the parents were warned of a probable fatal termination.

Calomel 2 grains and sodium bicarbonate 5 grains were given immediately in a little water and 5 minims of brandy ordered every two hours. In twelve hours the bowels had been well opened, a large quantity of tarry material mixed with bright red clots having been passed. There was still a little oozing from the mouth, but it was not nearly so severe, and the general condition was better, the pulse being palpable and regular, though still feeble. Similar quantities of calomel and sodium bicarbonate were again given to the child, and a third quantity left for it to have the next day. The brandy was now stopped.

By the fourth day all bleeding had ceased, the motions were normal, but the skin was deeply jaundiced and the sclerotics were yellow. In addition the child's movements were very feeble, there was great difficulty in persuading it to suck the breast, and when disturbed it uttered only a weak, puny, protesting wail.

The jaundice lasted a fortnight, the condition of the child improving rapidly as it disappeared. The child, now aged 3 months, is still small and of poor physique, but takes its food quite well, and is normal in all other respects.

I wish to thank Dr. Mozumder of Craghead for permission to report this case.

The remarkable fact in the case is that although the child was so poor physically, and so ill that its life was given up, yet heroic doses of calomel (6 grains in three days) enabled it to survive.

Roberta I. Hutchinson, M.B., Ch.B.

Craghead, Durham.

## PARTIAL RUPTURE OF UTERUS IN LABOUR.

Partial rupture of the uterus is, I think, a sufficiently rare complication of labour to make it worth while to record the following case:

A young healthy woman was attended by a midwife in her second confinement. The child was born naturally at about 4.30 a.m. on April 26th, and at about 5 p.m. the same day I received a note from the midwife asking me to call as soon as possible to see the baby. When I arrived, about an hour later, the child was dying, and it died soon afterwards. Although the child was said to have cried well at birth it did not seem to have properly expanded its lungs.

While in the house the husband asked me to look at his wife, who was complaining of rather severe after-pains. She, however, refused to be examined, as she said she was too sore to be pulled about, and only had after-pains. She was rather pale, but otherwise did not look as if she was suffering from any serious trouble. Next day I received an urgent message about 11.30 a.m., and on arrival found her collapsed, and she died shortly afterwards.

*Post mortem* there was a longitudinal subperitoneal rupture of the uterus, on the left side, about 2 inches long and extending about a third through the thickness of the uterine wall. The broad ligament and cellular tissue on the left side were filled with a mass of dark blood clot, and there was about a pint and a half of blood-stained fluid in the peritoneal cavity. The midwife stated that the waters broke twenty-four hours before pains commenced; otherwise the confinement was perfectly normal.

It is difficult to account for a partial rupture of this kind; possibly it might be due to a spontaneous rupture of some muscular fibres over an unusually large uterine sinus. Probably in this case it occurred some time before the child was born, and the loss of blood accounted for the weak state of the infant.

Carshalton. Angelo Gooding, M.R.C.S., L.R.C.P.

# Reports of Societies.

## ARTHRODESIS.

At the meeting of the Section of Orthopaedics of the Royal Society of Medicine, on October 4th, Mr. W. Rowley Bristow delivered his presidential address on the subject of arthrodesis.

Looking back over the evolution of bone and joint surgery since 1912 or 1914, it seemed to him that the most marked change had been the frequent resort to arthrodesis or the fusion of joint surfaces. Recently, during a short visit to the clinics of the Atlantic seaboard of America, he had found that there also the attempt was being made to solve certain of the orthopaedic problems by a more frequent resort to joint stabilization. Mid-tarsal sub-astragaloid fusion of the foot was now common practice in both countries, and so frequently was this procedure called for that the wonder was how it had ever been done without. Arthrodesis of the hip had a definite place in surgery; it was a modern method, practised little, if at all, in this country in the pre-war period. Arthrodesis was a destructive operation; the joint as a joint was destroyed, but it was in most instances preferable to amputation, which might be the only alternative, and by arthrodesis the disease might be cured or the symptoms abolished. The indications for arthrodesis were: (1) pain, and (2) loss of function, with or without deformity. Pain and loss of function most often resulted from arthritis, trauma, and paralysis. The contraindication most often met with was fixation or loss of control of a neighbouring or corresponding joint. As to the influence of the age of the patient as a contraindication, he suggested that fusion of the knee in tuberculosis of the joint was a reasonable procedure in children, and he did not believe that age played the part it was supposed to play as a contraindication to joint fusion. The whole question of the treatment of joint tuberculosis by operation must come under review. While the end-result of Pott's disease, treated by conservative means, was satisfactory, and also the end-result of tuberculosis of the small joints, it must be confessed that, on considering critically the true end-results of tuberculosis of the knee or hip, many of them were frankly bad. He would not have it thought that he was advocating wholesale operations on tuberculous joints in children, or affirming that conservative treatment by rest in country hospitals was a failure; but he did think that there was a type of joint—generally the knee or hip—which failed to respond to conservative methods. It was not well to be blind partisans of one form of treatment; the orthopaedic surgeon should keep an open mind and adopt what he believed to be the appropriate treatment for each patient. If this were done it would be found that in many cases a stage was reached when fusion of the affected joint would be the best treatment. Roughly speaking, there were two different procedures of arthrodesis—the intra- and extra-articular method; the latter was not truly outside the joint, and the capsule was opened. In the knee, the ankle, and most joints it sufficed to raw the bone ends and fix them in accurate contact. Certain technical points which he had found useful he explained in detail and with the help of slides. In the case of the hip the intra-articular method was liable to fail. Extra-articular

arthrodesis of the hip was a recent innovation. The procedure which most appealed to him was that devised and practised by Hibbs of New York. Hibbs transplanted the anterior two-thirds of the trochanter, together with about two inches of the cortical bone of the femoral shaft. This bone graft was pedunculated and left with the upper part of the trochanter attached by periosteum, and the free end—that taken from the femoral shaft—was laid along the superior surface of the neck of the femur bared for its reception and firmly wedged into a groove cut in the ilium above the acetabular rim. Slight abduction jambed the bone graft firmly into position. Hibbs laid great stress on the careful saving of the periosteum, and relied on this structure to form new bone. He peeled it off with care, taking perhaps the outer layer of compact bone with it if it did not strip easily. The arthrodesis or fusion of the spine which Hibbs practised left, when the dissection was complete, a series of spinous processes and laminae, cleared of periosteum, which periosteum formed a practically unbroken sheet lining the muscles and soft parts which had been retracted. Bone fusion was proved by clinical examination and skiagram.

The president went on to emphasize the value of arthrodesis in the treatment of painful joints following fracture or other trauma. He believed arthrodesis of the ankle the best procedure to adopt in any old malunited ankle-joint fracture when there was evidence of traumatic or mechanical arthritis. He also followed Wilson of Boston in advocating immediate arthrodesis of the subastragaloid joint for fracture of the os calcis. Arthrodesis of the spine—spinal fusion—was practised in America as the treatment for crush fractures of the vertebrae. The operation devised by Hibbs was the operation of choice, and anyone who had watched Hibbs arthrodese a spine must feel that the operation was bound to result in solid bony alkylosis. As to the part which arthrodesis could play in the treatment of chronic painful arthritis of the hip, after an experience of arthrodesis of the hip-joints in about thirty patients he could affirm that pain was relieved, although the hip did not always arthrodese, for the operation might, and frequently did, result in a short fibrous ankylosis. Certain considerations, however, had led him to try out the operation of reconstruction, leaving a movable joint. Although reconstruction of the hip was perhaps still in the experimental stage, it was well worth a trial; the after-treatment consisted in moderate fixation for a month, and then the patient was allowed up. The modern operation of mid-tarsal subastragaloid arthrodesis was due to Dunn in this country, and Dunn's method of stabilization of the foot had stood the test of time and gave good function. The speaker's general conclusion was that, while the uses of arthrodesis in the treatment of surgical tuberculosis during the active stage had to be carefully weighed and considered, he felt that in certain directions, notably in the treatment of mechanical arthritis, it could with advantage be practised more often.

Mr. R. C. Elmslie said that some seventeen years ago he collected a large number of cases of old excision of the knee, as it was then called, for tuberculosis. In those cases ankylosis had in almost all been attained, but the proportion with bad deformity was very high. This was due to two factors: interference with growth, and the bending of the bone at the point of fusion. He believed that damage might be caused not only by actually interfering with the growing disc, but merely by going anywhere close to it. In advocating fusion for tuberculosis there was some risk of making it a routine operation, to be carried out as a matter of course, and often without care for preliminary and after-treatment. Arthrodesis should be regarded as a method of internal fixation, but not as a method of curing disease.

Dr. Gordon Pugh said that he knew no more difficult disease to control than tuberculosis of the knee which had gone beyond the synovial stage, but cases admitted early, before the disease had progressed so far, as a rule gave rise to no trouble. He favoured the method of traction by suspension (described in his presidential address to the Section last year) for securing free movement of the hip-joint; the results had been most remarkable, and in no case had the acetabulum wandered. With modern administrative methods whereby cases were brought into hospital earlier, he believed that arthrodesing operations would be less called for.

Mr. Girdlestone held that there was no short cut of any sort to the treatment of surgical tuberculosis. Any operation for fusion of a tuberculous joint should be considered only as part of the conservative treatment. He would put the fusion operation at the end of treatment, and perform it only when the joint was limited in movement or destroyed as a functioning joint, and when the radiograms showed a considerable degree of diseased bone.

Mr. Trethowan expressed some disappointment with the results of reconstruction, on which no one had been keener than himself, and he thought it rather a melancholy confession if arthrodesis had to be acknowledged as the only mainstay in orthopaedic surgery. Mr. Naughton Dunn said that arthrodesis had proved valuable in Charcot's disease. Mr. Alan H. Todd mentioned that men in the Air Force who had sustained crush fractures of the vertebrae were still apt to complain of aching even after prolonged rest upon the back, followed by the provision of the most approved form of spinal support. Mr. H. A. T. Fairbank also spoke of the advantage of "arthrodesing" a Charcot joint case, which he had found to be an excellent procedure.

Mr. Rowley Bristow, in reply, said that he was far from advocating wholesale operating on tuberculous joints in children, but he did not think that the best was being done for the patient if he was kept in a tuberculosis hospital to which no competent operating surgeon was attached. He believed that in many cases arthrodesis was really the best treatment.

# Reviews.

## OPERATIVE SURGERY.

*The Operations of Surgery*,[1] edited by Rowlands and Turner, is now in its seventh edition. The book was originally written by Mr. W. H. A. Jacobson and immediately established its position as a favourite—a position which, during twenty years of unremitting revision by Jacobson himself, was steadily maintained. It is too well known to need any description of its general features, but its value is enhanced by certain special features which are scarcely indicated by the title. The operations are described in a manner such as would be expected from so gifted a teacher as Jacobson, but the book contains much more than operative technique; it is recognized that operations often appear from reading and watching to be easier than they really are, thus leading the unwary to attempt more than they can manage. Stress is therefore laid upon indications for and against operations, and special attention is called to the possible pitfalls and errors, difficulties and anxieties that may beset the path of the beginner. For example, under the heading of acute intestinal obstruction we read that "the grave urgency of this condition is not yet sufficiently recognized," and accordingly, with a view to ensuring earlier diagnoses, the signs and symptoms and the differential diagnosis of the condition are discussed in detail in addition to the technique of the operations for its relief.

A feature of the book is the evident care that has been taken to make the illustrations worthy of the text; in addition to the insertion of many new figures the previous illustrations have in many instances been redrawn, where it was deemed that improvement could be effected. Many changes have taken place in the twelve years that have elapsed since the issue of the last edition, necessitating numerous alterations and additions in many parts of the work, some of which may be alluded to. In Volume I the section on transfusion has been enlarged and brought up to date; an account of wounds of arteries by modern bullets has been added; the methods of bone-grafting have been

[1] *The Operations of Surgery.* By R. P. Rowlands, O.B.E., M.S.Lond., F.R.C.S.Eng., and Philip Turner, B.Sc., M.S.Lond., F.R.C.S.Eng. Seventh edition. London: J. and A. Churchill. 1927. (Roy. 8vo, Vol. I, pp. ix + 1036; 416 figures. Vol. II, pp. vi + 896; 378 figures. £3 10s. the two volumes.)

redescribed; the account of bullet wounds of the skull and brain rewritten, and a section added on the treatment of trigeminal neuralgia by injection of alcohol. Considerable additional detail has been given on the subject of plastic operation on the face, a branch of surgery which was revolutionized during the war; the section on the operative treatment of injuries of the chest has been rewritten, and recent methods in the surgical treatment of tubercle of the lung and bronchiectasis have been inserted. A section on periarterial sympathectomy for threatened gangrene of the extremities has been added, and those on operations on the semilunar cartilages and on the technique of bone-grafting have been rewritten.

The alterations and additions in Volume II include Mr. Philip Turner's description of the operation of simple removal of the sac in inguinal hernia; additional details regarding the pathology and treatment of subphrenic abscess; the cautery treatment of gastric ulcers, introduced by D. C. Balfour, and a greatly extended account of the radical operation for jejunal and gastro-jejunal ulcer. The following brief summary of the author's personal experience in the treatment of gastric and duodenal ulcers is of interest: with gastro-jejunostomy for duodenal ulcer there were 85 per cent. of cures (mortality 1 per cent.); with gastro-jejunostomy and cautery excision for gastric ulcer, 75 per cent. of cures (mortality 2.5 per cent.); with partial gastrectomy for gastric ulcer, 90 per cent. of cures (mortality 7 per cent.). In discussing the subject of peptic ulcers, the authors observe that the term "perforation" should be reserved for those cases in which there has been a local or general extravasation of the contents of the perforated organ into the peritoneal cavity, and should not be applied to adherent ulcers penetrating the adherent walls without extravasation. Statistics, especially in America, are vitiated by the loose use of this term. The Polya-Balfour method of partial gastrectomy, as modified by Moynihan, has been added to the volume, and a section on simple tumours of the stomach introduced. Experiences during the war have rendered a recasting of the subject of gunshot wounds of the abdomen necessary, a section has been added on wounds of the diaphragm, and the account of diverticulitis of the colon is practically new.

The numerous changes and additions that have been made in the two volumes show that much care has been bestowed on the revision in order to bring it up to date. One of the main objects of the work, as stated by the authors, has been to give credit and fair criticism to any new operation that seems worthy of consideration and trial; some of the methods suggested will survive, others will be rejected after a cautious trial.

## TUBERCULOSIS IN CHILDREN.

To a "library of tuberculosis," edited by Professors Chantemesse, Poncet, and Collet, Drs. Péhu and Dufourt have added a very complete treatise entitled *La Tuberculose médicale de l'Enfance*.[2] They furnish a synopsis of current pathological and clinical views on tuberculosis in children, with special reference to pulmonary and generalized forms of the disease. After a historical introduction, and a chapter on the frequency of infantile tuberculosis, they discuss the vexed question of heredity under the headings "Heredity of the seed" and "Heredity of the soil." Of the former kind they consider that the only mode of inheritance of any importance, though even this mode is rare, is contagion through the placenta. They describe the researches of Calmette and others on the passage through the placenta of a filterable virus of tuberculosis. With regard to the heredity of soil, the authors consider that inherited predisposition to tubercle is far from being proved; but they think that tuberculosis in progenitors is a cause of dystrophic lesions in descendants, though less frequently than has been asserted.

It appears that infection through cow's milk is extremely rare in France; but Drs. Péhu and Dufourt are not prepared to deny its occurrence, though deprecating exaggeration of the danger. They have come to the conclusion that pulmonary tuberculosis is almost always of human respiratory origin, though sometimes arising from ingestion into the intestine of human or bovine tubercle. Abdominal tuberculosis, on the other hand, they find to be predominantly of digestive origin.

A large section of the book is devoted to the pathological anatomy of the disease, and this is followed by a description of the clinical features. Here a division is made into the tuberculosis of nurslings and the tuberculosis of what is called in France "second childhood," the distinction between the two groups being the far greater resistance offered to the infection by older children. In this connexion the authors assert that if it is considered necessary to retain the word "pretuberculous", it must be understood that in the majority of cases the pretuberculous person is already tuberculous in the bacteriological sense of the word, and under the influence of bacillary poisons.

As the use of the word "scrofula" has been almost given up in this country, the chapter on the condition so described by foreign observers should be interesting to the Englishman. The authors are convinced that scrofula is a special affection arising from an exudative lymphatic diathesis. The cuti-reaction to tuberculin of sufferers from scrofula takes a special form, being always positive, always intense, and even violent.

Under the head of treatment the various measures commonly used are discussed. Drs. Péhu and Dufourt are strongly opposed to seaside climates for nurslings with clinical or radiological signs at the apex of the lung or in the mediastinum. Heliotherapy is not for indiscriminate use; it may be dangerous. Tuberculin as a therapeutic agent is discussed, but the authors reserve judgement since, notwithstanding optimistic conclusions reached by some who have employed the remedy, there are many detractors, though it is suggested as possible that the opinion of those who distrust tuberculin is due to excess of prudence in its use.

The book is a useful compendium of research on, and knowledge of, tuberculosis in children. An extensive bibliography is appended to the volume, together with a number of reproductions of *x*-ray photographs of chests.

## LECTURES TO GENERAL PRACTITIONERS.

The Medical Society of the County of Kings represents organized medicine in the borough of Brooklyn of the Greater City of New York and now, after a continuous existence of 105 years, has a membership of 1,700. Among its varied activities is an annual course of lectures of practical value to general practitioners by men of recognized ability and teaching experience. The second series of these *Practical Lectures on the Specialties of Medicine and Surgery*[3] contains contributions from thirty-seven authorities on most diverse subjects. Professor G. W. Crile gives his experience of 13,988 operations on the thyroid gland, 95 per cent. being thyroidectomies for hyperthyroidism; for this condition, which is not primary in the thyroid, and may be induced in adults with adenomatous goitres by continued iodine medication, the only satisfactory treatment is, he says, operation. Dr. M. A. Rabinowitz, in a lecture on hyperthyroidism, insists that iodine should be given only as a prophylactic and curative agent in the diffuse colloid goitre of puberty and never in localized adenomas; but he differs from Crile, who has no good word for *x*-ray treatment, in recommending irradiation therapy. That surgery is the best treatment for hyperthyroidism is also the opinion of Dr. F. H. Lattey, who discourses on the varieties and treatment of goitre.

Dr. Timme, lecturing on endocrinology, discusses the bearings of the status thymicolymphaticus, which he prefers to call the status hypoplasticus in agreement with the originator of this term, Bartels. The therapeutic value of non-surgical drainage of the biliary tract is set out by Dr. B. B. Vincent Lyon of Philadelphia, who has done so much to elaborate this technique, and Dr. H. E. Stewart, the author of a book on diathermy, gives a summary of

[2] *La Tuberculose médicale de l'Enfance.* By Maurice Péhu and André Dufourt. Paris: G. Doin. 1927. (6 × 8½, pp. 732; 16 plates. 75 fr. sans majoration.)

[3] *Practical Lectures on the Specialties of Medicine and Surgery.* Delivered under the auspices of the Medical Society of the County of Kings, Brooklyn, New York. Second series, 1924-26. New York: Paul B. Hoeber, Inc. 1927. (Med. 8vo, pp. xix + 560; 110 illustrations. 7 dollars.)

physicotherapy. Dr. J. Eastman Sheehan's account of the present position of plastic surgery is very generously illustrated by 16 figures, and shows that, though the war gave opportunities for improvement in the technique, there is much need for plastic surgery in civil life, especially for the relief of the after-results of burns. The practical aspects of the cancer problem are handled by Dr. W. S. Bainbridge, and Dr. F. Carter Wood describes the uses and limitations of radiation in malignant disease. Other lectures deal with the newer remedies, the colon, the doctor in court, fits, gaits, puerperal infection, the toxaemias of pregnancy, the colds of children, and periodical health examination. This list does not nearly exhaust the catholic nature of the lectures in this well brought out volume.

## STERILITY IN WOMEN.

DR. CATTIER, to whom was awarded a few years ago the Michelin prize on the depopulation problem for an essay entitled "Des Bébés, s'il vous plaît," has now written a book on female sterility with the subtitle "maternity restored."[4] The very fact that it is written by a medical representative of the group in France that is trying to combat the effects of birth restriction in that country gives the book a character of its own, and it must be regarded as a medical treatise on sterility and as advocating the views of a particular sociological school.

The investigation and treatment of sterility in women is considered fully both from the preventive and curative standpoint, and with the enthusiasm of one who regards his subject as of the utmost importance for the welfare and betterment of the race. Recent methods, such as those of Rubin and his followers, for investigating the patency of the Fallopian tubes by insufflation or the injection of opaque solutions, are included, as well as details of treatment by general hygienic measures, organotherapy, massage, exercises, hydrotherapy, pessaries, artificial insemination, and various surgical procedures. Considerable space is properly devoted to the treatment of local inflammatory conditions of the lower straits of the genital tract in order to lessen the incidence of the chronic uterine, tubal, and peritoneal conditions that interfere with the reproductive function. There is little critical discussion of the relative value of the various procedures and forms of treatment advocated, and it is not easy to discover how much is to be expected in the way of results or how to make a selection from among so many. There is a concluding chapter on the amelioration of the race, the modern marriage, eugenic selection and prenuptial examination, for the last of which the author shows no enthusiasm.

The book is typically French in style, with many curious asides and digressions that lighten and enliven what would otherwise be heavy medical reading. It will have a particular interest for those who wish to study the question of depopulation, or to learn the views of a medical practitioner who is among those who have seen reason to take alarm at the effect of the restriction of families in a country that has practised it widely and for long.

## FACT AND FANCY.

THERE are some who deny that the world is round, and some who still believe in the mystery of Joanna Southcott's boxes, so that it is not altogether a matter of surprise that there are others who deny the facts of physiology and of experience. There is a book before us written by one W. H. BATES, M.D., which for boldness of denial and strangeness of assertion rivals the others. The title of the book is *The Cure of Imperfect Sight by Treatment without Glasses*,[5] but that on the cover is "Perfect sight without glasses." The author would have us throw away our useful glasses, and beguile ourselves into the belief that we see better without them. Trial shows that we do not, and that his alleged treatment is no more than a beguilement that does not stand the test of experience. To practise judgement of what is seen is one thing, to see that same thing better is another; to "palm" the eyes—otherwise make use of familiar and refreshing massage—is one thing, to alter an anatomical defect another. But then this author denies anatomical facts, and alleges that all errors of refraction are merely functional. Strangely enough, he admits the use of glasses for patients who have no lenses as the result of cataract operation, but denies the use of the lens in accommodation, despite the evidence of Purkinje's figures, which he has heard of, for he reproduces the classical picture in his pages. His cult extends to the assertion of the value of small print, even that which is so small that it cannot be read; "those who cannot read such type may be benefited simply by looking at it." Excessive light, he alleges, is not injurious, but actually beneficial; therefore look open-eyed at the sun. Reading in bed is "beneficial rather than injurious," perhaps when the print is not seen! But, strangely, black has its virtues: "It is possible to perform surgical operation without anaesthetics when the patient is able to remember black perfectly." Perhaps the author got somewhere near a truth in a sentence in the last paragraph of this book: "The fact is that, except in rare cases, man is not a reasoning being."

We met one of this cult recently; a parent had been summoned to attend a certain place owing to his persistent refusal to provide his child with glasses for school use. The child had myopia of 3 D; without glasses vision was 1/60, with glasses 6/6. The child appreciated the value of the glasses, but the father would not allow them to be worn, alleging other treatment. But the recalcitrant parent wore glasses himself for an equal degree of myopia. It seems a pity good paper should be wasted on such a book, or that our columns should give space to its notice. But there have been inquiries, and so this review.

## NOTES ON BOOKS.

THIS is the season of mellow fruitfulness in the publishing world, when new books and new editions fall thick and fast upon us. Among the imported fruits of learning and industry we welcome a further edition, the fourteenth, of the *American Illustrated Medical Dictionary*,[6] known to many in this country as the "Big Dorland," to distinguish it from its diminutive elder brother, the "Little," or "Pocket Dorland." The present issue has been thoroughly revised by Dr. NEWMAN DORLAND in collaboration with Dr. E. C. L. MILLER, professor of bacteriology and biochemistry in the Medical College of Virginia. It is stated in the preface that there are over 2,000 new terms in this edition, and many definitions have been rewritten to bring the terminology in accord with the latest accepted ideas. The spelling, of course, follows American usage. Many new line blocks have been added in order to elucidate definitions and emphasize points that can be well shown in this way. Since it first appeared twenty-seven years ago the work has grown continuously. The fourteenth edition contains nearly twice as many pages as the first, but, owing to the use of thin but opaque paper, the thickness of the volume has not increased in proportion. The English-speaking medical profession owes a large debt to Dr. Dorland for the high standard of care and accuracy maintained through successive revisions.

The second edition of Dr. ALEXANDER'S textbook on diseases of the ear in childhood[7] is really a complete work on otology, with special reference to the anatomical and pathological peculiarities presented in the young. The first edition appeared some fifteen years ago. The frequency with which the ear is attacked by disease in childhood may be the justification for this rather artificial restriction. But, as we have indicated, the book is far more comprehensive than its title, the only important omission to be discovered being the absence of any reference to tumours and other diseases of the eighth nerve. There is no call for criticism, for the work, which is dedicated to the memory of Adam Politzer, is written by one of the great masters of otology, is of a reasonable size, and is adorned with many fine illustrations.

[4] *La Stérilité Féminine: Les Maternités Récupérées.* Par Dr. Cattier. Éditions Médicales. Paris: N. Maloine. 1927. (5½ × 7½, pp. 254; 15 figures. 15 fr.)

[5] *The Cure of Imperfect Sight by Treatment without Glasses.* By W. H. Bates, M.D. London: A. F. Bird. 1927. (5½ × 8, pp. xx + 314; 56 figures. 15s. net.)

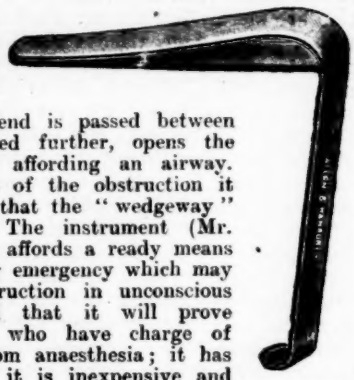
[6] *The American Illustrated Medical Dictionary.* By W. A. Newman Dorland, A.M., M.D., F.A.C.S. With the collaboration of E. C. L. Miller, M.D. Fourteenth edition, revised and enlarged. Philadelphia and London: W. B. Saunders Company. 1927. (Med. 8vo, pp. 1388; illustrated. 35s. net; with thumb index 37s. 6d. net.)

[7] *Die Ohrenkrankheiten im Kindesalter.* Von Dr. Gustav Alexander. 2, umgearbeitete Auflage. Leipzig: F. C. W. Vogel. 1927. (Imp. 8vo, pp. xii + 399; 106 figures, 9 plates. M.38.)

## PREPARATIONS AND APPLIANCES.

*"The Wedgeway."*

Mr. A. Lowndes Yates, F.R.C.S. (Birmingham), has designed an instrument to replace the wedge which it is customary to employ whenever the teeth of an unconscious patient are tightly clenched and respiration is obstructed. It consists of a tongue depressor having a double deck. The thin end is passed between the teeth and, when pushed further, opens the mouth, at the same time affording an airway. If the tongue is the cause of the obstruction it can be depressed, provided that the "wedgeway" is introduced behind it. The instrument (Mr. Lowndes Yates writes) thus affords a ready means of dealing with almost every emergency which may arise from respiratory obstruction in unconscious persons. It is anticipated that it will prove specially useful to nurses who have charge of patients during recovery from anaesthesia; it has the further advantage that it is inexpensive and cannot get out of order. The wedgeway is obtainable from Messrs. Allen and Hanburys, Limited, 48, Wigmore Street, W.1.



# THE LONDON MOTOR SHOW.

## SOME POINTS FOR MEDICAL MEN.

By H. MASSAC BUIST.

The twenty-first international motor car show opens at Olympia, Kensington, under the patronage of the King, on Thursday next, October 13th, and will remain open, the Sunday excepted, until 10 p.m. on Saturday, October 22nd. Various changes have been made in the organization, all of which are to the good. Thus in former years the public have not been admitted to the exhibition until the Friday, the Thursday being called a trade and press view day. But what was intended to be purely a business facility was so much abused that the situation became unmanageable. Many thousands of persons concerned neither with writing about the exhibition nor with motor trading sought and secured admission. The Society of Motor Manufacturers and Traders has arrived at a happy solution of the problem. It will make no change in the charge for admission on the days which have hitherto been available to the public and will again be available; but on Thursday next the exhibition will also be open to the public, instead of closed as hitherto, and it will be possible for anybody to enter the building by paying ten shillings at the turnstiles. Thus the congestion problem will be solved, and through the added revenue still further advancement of automobilism will be possible for the only body which has the opportunity to do this, by such means as subsidizing institutions that cannot afford to pay for the investigations they were established to carry out, encouraging certain classes of competitions for the evolution of the machine, and holding exhibitions concerned with branches of automobile enterprise which do not draw large numbers of the public and on which there is therefore a loss.

### Improved Stand Scheme.

Another improvement of note may be observed by anybody on entering the building. It concerns the lay-out of the stands in the car section. As far as possible island stands are being provided along a continuous central gangway from the new entrance off the main road to the central gangway in the main hall. Another set of regulations is designed to remedy the scandal of what I would call make-believe British motor cars. Not until this year has there been anything approximating to a satisfactory definition of what constitutes a British-built vehicle. In that connexion the society sent to America a delegation which has done very satisfactory work in clearing up some parts of the problem. Next week in respect of every motor car shown at Olympia there will be stated on every show card, price card, or other form of notice submitted the following particulars: "Chassis made in ——" and/or "carriage work made in ——." Where the exhibit displayed is wholly the product of one country, one announcement, "Made in ——," may be displayed. In regard to accessories, components, and tyres, similar information will be conveyed (*a*) by means of a card attached to every item exhibited; (*b*) on a schedule of all the items exhibited, prominently displayed upon the stand as approved by the exhibition manager; and (*c*) by one notice "Made in ——," where the whole of the exhibits are products of one country. The most difficult point to settle in the past has been: What constitutes a British-made car for the purposes alike of trading and of exhibition? Thus some machines which have been only assembled and packed in Canada have actually entered this country as British built. The new rules lay down, however, that the chassis and carriage work of complete cars shall be regarded separately, and that the country of origin shall be that within which the exhibits have been mainly produced, except that claim shall not be made for origin of any country within the British Empire.

### Germany's Re-entry.

The forthcoming exhibition will be further notable in the history of the motor business in this country because, for the first time since 1913, German chassis and coachwork and other automobile goods are admissible and will be displayed. Thus there will be shown the six-cylinder Mercédès cars of various sizes, including the very high powered supercharged types, and which have perhaps an "academic interest" for medical men, since this year we have in the Lea-Francis a British car standardized with a supercharger. Mercédès pioneered this development as far as standardized motor car practice is concerned. I would describe the effect, from the driver's point of view, as being that when he has attained a certain speed and thinks he has got the utmost out of the engine, by further depressing the accelerator pedal so as to bring the supercharger into use he suddenly gets the impression that a second engine has been insinuated under the bonnet of the car. Then the need for gear changing is greatly reduced. At present, however, such a well proved device is available only in these very expensive cars which do not come within the purse-range of the average medical man, and its use sets up a moaning noise.

### The Ford Situation.

As in former years Ford cars will be conspicious by their absence, because this firm has never signed the Society of Motor Manufacturers and Traders' bond. But, largely owing to an ingenious publicity campaign, many medical motorists are curious to know about the promised new style Ford car. It has even been hinted that it would be exhibited elsewhere in London concurrently with the Olympia show. This, however, will not be the case. I may state, as a result of private (as distinct from official) information from America, that the new Ford car is not even in production there, though large numbers of some of the parts have been going through the shops. So far approximately 350 of the new engines and chassis have been built and stored, pending Mr. Ford's final decision. Assembly production works in Detroit are in readiness to get going on a proposed schedule of approximately 300 cars a day, which is a very small output for Ford. Much has yet to be done before big production can be attempted. Even in America Ford agents are considering that they will be lucky if they get more than a sample car and a few spare parts during the rest of this year.

Changes are being made, and tests carried out, in connexion with pistons and connecting rods. A good deal of experimental work is still going on. Instead of all-steel pistons, for example, some on the lyanite principle are being considered. Connecting-rod changes are being investigated, chiefly with a view to reducing cost, for it is intended to produce a better product at approximately the same price as that hitherto charged for Ford cars. Mr. Ford is not satisfied with the cost per car, nor that everything has yet been done to effect savings that will enable the car to be marketed at as low a figure as may be possible. A very important point is that, in association with his engineers, he has developed a new steel treatment, which is understood to produce a metal of great strength and toughness. If this is so it will be a big accomplishment, and will assist the sale of the new car just as the former method of steel

manufacture made possible the model "T." The new treatment of steel, together with the discarding of the use of malleable, in the new car has made possible a rearrangement of important parts of the factory plant, which, it is understood, will greatly reduce overhead charges and cut down the amount of labour needed. A like procedure is being followed in regard to all details of the works equipment, machine groupings being made to effect saving in operating costs: instance the fact that certain parts are now being made in three operations which formerly required six.

### UNBREAKABLE GLASS AND EVAPORATED DYES.

Again, the glass plant is being employed on a much reduced scale pending the result of experiments now in progress concerning an unbreakable glass. The company is still awaiting the receipt of a number of important new machines that will play a big part in quantity production schemes. Practically all the change-over plans of production and factory equipment have now been completed. Plant for manufacturing lacquer for body finishes has been installed, and the company is making experiments on a large scale in the use of synthetic dyes from Germany. To lessen high duties on importing these materials the liquids in the dyes are evaporated off before shipment, so that large quantities may be sent across the Atlantic in concentrated form.

Seeing that the new Ford engine designed in America is 1/8 in. wider in the cylinder bore measurement, and that the piston travel is half an inch longer, it would appear to be an impracticable type for sale in this country, although it follows conventional construction and has an L-head, a pump-assisted cooling water circulation with a single piece two-bladed propeller-type fan, and oil-pump circulation at the base of the crank case. A five-bearing crank shaft of a much heavier type than in the model "T," and counterbalanced by the use of circular crank cheeks joining the crank pins, is another feature. But for new Fords to be built in this country and for the European markets an engine of about £12 taxation rating is in hand. The new type generator to be used on all Fords is equipped with oilless self-lubricating bearings; but the old Ford starter will be retained. An improved steel selective type transmission scheme, that practically reproduces the Lincoln scheme on a lesser scale, is a feature, as also will be a clutch on the Lincoln principle. The front axle will be heavier than in former Ford practice, on account of the provision of front-wheel brakes of the internal expanding type, equipped with two-piece steel brake-shoes on each drum and achieving a total braking surface of 144 square inches. Further, what Americans call parking brakes, and we call hand-controlled brakes, are mounted on the two rear wheels. The radiator and hood will be larger than in the model "T" Ford and with round lines. The top will be lower, bringing the car nearer the ground, and the springs will be flatter. The wheel-base will be 110 inches, and the hubs will be larger, with roller bearings in the wheels. The steering wheel will be of the irreversible type. Perhaps the most important point, however, is that, contrary to the practice hitherto pursued by Ford, plans permit of the new type of car being developed and changed in detail in exactly the same way that other motor manufacturers operate. Therefore, Ford cars may be presented in a different form from year to year, according as changes in demand come about.

### NEW CARS WITH SIX AND EIGHT CYLINDER ENGINES.

Olympia will certainly provide greater mechanical novelties than will be found in the new Ford car, in spite of the fact that the notable new Durant series of 18-h.p., six-cylinder engined, low priced, external expanding, four wheel braked Rugby cars, listed at from £285 to £365 complete, will not be shown, being sixth on the society's waiting list of would-be exhibitors. Nevertheless, there will be many entirely new vehicles in almost all categories, though the majority have six-cylinder engines. But no less a constructor than Wolseley, now owned by Mr. W. R. Morris, will introduce a 12/32-h.p., 1,542 c.cm., four-cylinder engined, £12 tax, four-speed, £315 all-steel saloon car with an overhead valve cam shaft, listed at £295 as a four-seater; Standard will show a four-cylinder 9-h.p. car; Bean a new 14-h.p. four-cylinder car; and Clyno will introduce a new four-cylinder 9-h.p. car selling at £145 or as a fabric saloon at £160, and also a two-seat £250 12/35-h.p. model. At the other extreme Daimler brings the V-type twelve-cylinder double sleeve-valve engined chassis within the purse, running cost, and coachwork range of a much wider public than the nominal 50-h.p. type. That is now supplemented by a 30-h.p. machine that will be shown at Olympia, and an example of which has been ordered by the Queen. It is an admirably flexible and speedy car for the specialist.

Apart from the introduction of some new "straight-eight" American cars—as well as of the Cadillac-built V-type La Salle—a notable British supplement to Sunbeam's enterprise in this connexion will be the introduction of an overhead valve "eight-cylinder-in-line" engined nominal 20/60-h.p. Wolseley car. Perhaps I should mention that one of Mr. Morris's hobbies for some years has been the private building, at great expense because on an experimental scale, of eight-cylinder-in-line engined cars, he himself being a firm believer in the principle. This eight-cylinder Wolseley is notable for its relatively low cost, the bore measurement being 2 9/16 inches and the piston travel 4 inches. The exhibit will show the chassis fitted with a smart covered saloon body of modern type, ample accommodation, and luxurious upholstery in the best leather to the high waistline, the upper portion being finished in cloth. The list price is £750 only. The bucket-type front seats are adjustable independently, and the rear seat, which accommodates three persons, has arm rests on either side. The engine, clutch, and gearbox are also to be shown as a separate unit. The robust and carefully balanced crank shaft is arranged to run in ten white-metal lined bearings. The high-tension ignition has both hand and automatic control, and the patent automatic equalizing carburettor is fitted with an air cleaner. Among new American "straight eights," too, will be found the Marmon and the Auburn, the latter an assembled car; and the German industry contributes a fine example in the three-litre Horch.

### WHY MORE CYLINDERS?

I indicated in these columns last year that in the near future six-cylinder engines would be in a considerable majority, not as regards chassis models only, but also as regards the total number of cars to be built. We have not reached that stage yet, because Ford is still rather obsessed with the four-cylinder idea, though he is experimenting with six-cylinder engines; but that type is being made in greater varieties, and also in smaller sizes. Therefore already it is being made available in some cases at unprecedentedly low prices this year—instance the new side-valve 1,474 c.cm. Renault "Monosix." Indeed, whether we turn to the American, to the Continental, or to the home industries, it will be found that most of the entirely new chassis to be shown at Olympia have six-cylinder engines. The reason is that, no matter how quickly a four-cylinder engine is made to accelerate, still this cannot be done so smoothly, nor with such absence of strain to the mechanism, as with a six-cylinder machine of equal power, because, to put the matter non-technically, with a four-cylinder engine the most that can be done is to have the explosions just connecting up, whereas those explosions, or power pulses, must overlap in a six-cylinder construction. Of course, on an eight-cylinder engine, designed and built to possess equal merit, this advantage is still more pronounced. That is why, in the luxury car class, the eight-cylinder engine is coming rapidly into vogue, standing to-day in much the same relation to the six-cylinder type that hitherto the latter has occupied in relation to the four-cylinder engined car.

There is, of course, nothing at all experimental about the six-cylinder engine as such. Indeed, one might say that, in face of our aircraft engine experience, there would be nothing experimental about making an eighteen-cylinder engined car, not that such a prime mover is likely to be required for car service, though the Daimler "double sixes" are a practical exposition of still greater flexibility, and therefore of more top-gear drive, than is possible with an eight-cylinder engine of equal capacity. The element of doubt about any new six-cylinder engined

chassis must consist entirely in this, that either the designer or the builder, or both, may lack previous experience of standardizing six-cylinder power units. This year has not been without costly illustrations of the fact that one may even have made successfully a six-cylinder engined chassis in the pre-war period, but that that experience will not necessarily suffice when deciding to return to that sort of enterprise after an interval of twelve or more years.

### Some Typical Novelties.

By way of illustrating the quite new six-cylinder engined types that will be introduced to the public next week, I may mention the enterprise of the Peerless Motor Car Corporation of Cleveland, Ohio, one of the three foremost high-grade car builders in the United States since pioneer days, in introducing a £435 six-cylinder engined car. Auburn will also show a vehicle with a six-cylinder engine; and Dodge Brothers of Detroit and Toronto will show a new six-cylinder engined range of 224 cubic inches cylinder capacity, having a sturdily built crank shaft, the scheme being standardized with all-steel bodies by the pioneers of that system of construction now taken up by Citroën and by Morris for certain types. This is the first six-cylinder car built by an organization which has produced and sold over two million four-cylinder engined Dodge cars in thirteen years. Among other types, France sends a new 16-h.p. Darracq, and Fiat introduces an £18 tax side-valve six-cylinder engined chassis, which will be shown both in that form and as an interior driven saloon. All the German Mercédès cars have six-cylinder engines, three types—with two-litre, three-litre, and four-litre engines respectively, the two former with side-by-side valves and the last-named with the overhead form—being non-supercharged; and three overhead valve engined types of 33/140, 33/180, and 33/220-h.p. respectively, with superchargers.

New British six-cylinder engined cars of note will be shown by Alvis (a two-litre), Rover (a two-litre), Armstrong-Siddeley (a two-litre 15-h.p. type). Arrol-Aster (20/60-h.p.), Star (18/50-h.p.), and Vauxhall (£20 tax, 20/60-h.p.). The 16-h.p. Austin, announced a month ago for delivery in March, will not be shown.

### New Big Scale British Large Car Production.

From the points of view of manufacturing and marketing the most conspicuous six-cylinder engined British novelty of the show will be the new Vauxhall. It is the first-fruit of the purchase, two years ago, of that old-established company, always concerned with building a limited number of very high grade cars at Luton, where the works have been enlarged to facilitate the production of this new style machine of quality at the rate of 200 cars a week, or 10,000 vehicles a year, at a chassis price of £375, or as a Princetown five-passenger touring car, complete with all-weather and other equipment, for £475, as a two-seater for £485, as a coupé for £670, as an enclosed limousine for £520, and as a five-passenger Bedford saloon for £495. From the point of view of the evolution of the motor vehicle this is extremely interesting, because it might be called a Vauxhall car of Vauxhall quality, but of redistributed values. Thus in the past great expense has been incurred to achieve certain qualities required by a very limited section of the motoring public, who are prepared to pay for them, and, being expert drivers, do not mind changing speed frequently. But in making an appeal to justify such an output as is now embarked on we get a car which, while obviously a Vauxhall, nevertheless incorporates certain phases of American practice which have been proved to appeal to the generality of motor users the world over. This is notably so as regards gearing of the back axle and engine speed. The non-technical motorist's ideal is to be able to do what is called "step on the accelerator pedal," whereupon the car should gather speed without misusing the engine. That feature, pioneered by the American industry, is to be found in the new Vauxhall car. When, however, we come to such delicate matters as engine balance, engine efficiency for volume, and so forth, or the four wheel braking scheme, or the steering, or the freedom from vibration and the accuracy of the suspension, we find American practice far eclipsed and the best European standards maintained. In other words, this is essentially not an American Vauxhall, nor a transatlantic car of any sort, since it is ahead of what American manufacturers can achieve. I consider it a very happy combination of American features that make the widest appeal with European and, especially, British features that are as yet unequalled. Undoubtedly this is a car destined to exercise a very important influence in the full scale six-cylinder engined car market, for it is pre-eminently suitable for service overseas as well as in this country. The light steering employs the Marles cam and roller principle. The gearbox gives four speeds forward, though these are controlled centrally in American style. Semi-elliptic springs are used fore and aft.

### General Developments.

Incidentally, a study of the products of the American industry reveals a distinct tendency to achieve lower centres of gravity by "double dropping" the frames in the manner exploited in Europe by certain constructors for years past. In regard to covered bodies, the problem of ventilation is receiving much-needed attention in this country. Hitherto one had to get a car specially built if air and light were to be admitted through the roof. Now, however, several constructors will be found offering standardized saloons with non-rattling but movable roof schemes, whereby one can enjoy ventilation and proceed in sunshine without glare, and without draught, because all the windows can be kept closed. Undoubtedly there will be as big a vogue for these bodies as for the fabric type of covered coachwork, which comes into its own this year. We shall see it on cars of all sizes, powers, and costs. Some Americans standardize ventilators at the top of one-piece wind screens, which prove admirably effective. Steel building of covered cars also gains some adherents. Lacquer finish is all but universal for standardized productions, and big advances will be observable—notably on the part of the British industry—in that connexion this year.

Of course, nowadays, nobody should have a car without four wheel brakes. No one system is universal; but a great number of the systems produced by accessory manufacturers, and standardized by the producers of cheap cars, exhibit much-needed improvements in detail. A good deal, however, has still to be learnt about four wheel brakes by at least three car builders out of four. The problems involved are incapable of non-technical explanation, even if a whole article were devoted to them. Suffice it to say that one of the practical features of the low-priced four wheel brake equipment this year is that no attempt is made to absorb too much power through those European systems which are not absolutely scientific, and that there is therefore less chance of the driver coming to harm if anything goes wrong. A section of the American industry still continues to employ contracting band brakes, an obsolete system that has no justification. No medical man should have any car with a contracting collar brake. Instead of checking the wheel, this type either chokes it or lets it run free, skidding being one of the unsatisfactory results.

The advantages of studying overseas conditions in many of the Dominions is revealed in the new series of Hillman cars. These remain four-cylinder engined machines, but they look at least twice as important as before, have longer wheel bases, much better balanced engines, and much better steering. They are now really suitable for service overseas. The wings can be sat on without harming them. Yet this is not an American car, but essentially a British product, as may be judged by the comfort of the seating, for our designers can achieve much more accommodation within a body of a given dimension than is the custom in transatlantic practice. Pneumatic cushioning, instead of spring and hair types, gains many adherents for standardized practice, and is most advantageous; it is the only type at all satisfactory for such hard conditions of use as high-speed aircraft service. Central chassis lubrication gains a notable British adherent in Armstrong-Siddeley.

Incidentally, the opening of the Motor Show will coincide with the completion of the building and equipment of factories in this country by three important foreign tyre manufacturers, so that henceforth there should be no monopoly in this industry.

British Medical Journal.

SATURDAY, OCTOBER 8TH, 1927.

## THE PATHOLOGY OF THE LIVING.

FOR the subject of his address at the opening of the medical session at King's College, London, Sir Berkeley Moynihan chose one rather larger than his title might suggest, as will be seen from the full text published in this issue (p. 621); for he discussed not only the training of the surgeon, but also the way in which surgical problems should be considered, and he emphasized and elaborated the theme with which he dealt in his Hunterian Oration earlier in the year.[1] He then insisted on the importance of observations made at the time of operation on living human bodies, which have enabled surgeons to study what he happily calls the pathology of the living, and which, as he holds, should prove of the first importance in the future advance of our knowledge of anatomy, physiology, and pathology.

Lord Chancellor Thurlow's rough denial of the right of surgery to be called a science, to which Gunning so effectively retorted, was not without some justification at that time, and, despite the enormous improvement which the nineteenth century witnessed, surgeons have perhaps been too ready to accept the position of mere executants, and to leave science to the physiologists and pathologists. The growth of knowledge, which had become too much for one mind to grasp in detail, and the necessary development of specialism in the ancillary studies, encouraged this attitude. Sir Berkeley Moynihan, however, did not convey the impression that he would have the surgeon able to compete with the bacteriologist and biochemist in their work, but that he should recognize and avail himself of the great opportunities of fruitful observation which the practice of surgery affords. It is not too far-fetched an inference to conclude, as Sir Berkeley Moynihan has done, that such a change in the surgeon's outlook is in principle only a return to the methods of Hippocrates and Galen, whom he claims as the parents respectively of inductive and deductive reasoning and as indubitable members of our profession. Whether these authors of the theory of the four humours and of all its dependencies will be accepted by philosophers and medical historians as the only begetters of these logical methods may be at least doubtful, but we think that the claims of Aristotle, who was trained as a physician and was a great comparative anatomist, should not be passed over in this connexion. Sir Berkeley Moynihan sets a high ideal before his colleagues and students when he claims for surgery the status of a science of exact observation and of inductive reasoning, and asserts that it is a method of seeking the cause no less than the remedies of many diseases. Looking at his activities in this light, the surgeon ceases to be the mere handicraftsman, and is able to go alone as an explorer and discoverer without diagnostic support from the physician. Experiments upon living animals have been of the first importance and the greatest value in the study of normal tissues and organs and of their reaction to injury or infection, and a very large part of the advance of the last hundred years has been due to them, but those who have had to do with diseased organs and tissues have found that there are limits beyond which the analogies of healthy parts will not carry them. Very many of the causes of disease in the human body are of a chronic and often obscure kind, and their conditions cannot be reproduced at will in other individuals, especially when, as usual, those individuals belong to another species. Just as Lister, by preventing sepsis, made experimentation on living animals—analogical research, as Sir Berkeley Moynihan calls it—safe and generally painless, so also "the new weapon of direct research upon man during remedial operations or after grave injuries was forged by him alone." As far as we know Lister never performed an abdominal operation; yet the most obvious triumphs of the method of direct research have been won in the abdomen, where duodenal ulcer was practically unknown except as a pathological rarity until surgeons, aided by radiologists, revealed the frequency of its occurrence as well as many of the conditions which favour its development or accompany it. Sir Berkeley Moynihan made an emphatic protest against the performance of short-circuiting operations in cases in which no definite lesion has been found to justify them. Such operations at one time had become far too common, so much so that a French surgeon has written a book entitled "Gastro-enterostomy a disease." The result of his study of the pathology of the living has convinced the President of the Royal College of Surgeons of the accuracy of Dr. William Hunter's observations and of the correctness of his inference that much disease in the body is due to far away and in themselves apparently insignificant foci. Yet Hunter has had to fight hard for a quarter of a century, and his case should be a warning to us not to reject or neglect new ideas because at first sight they may seem strange.

Sir Berkeley Moynihan had a good deal to say about routine operations and the evils of merely imitative surgery, and here we think that his saying is too hard for most of us. No doubt the man who is content merely to imitate the operations of a master, and who does not want to improve upon them, will not make startling discoveries or do things great in any way; but in the daily round, the common task, a great deal of routine is unavoidable. When Sir Berkeley's colleague at Leeds, Mr. A. F. McGill, discovered that the enlarged prostate gland could be shelled out of its capsule he made a great and original discovery, by which those who followed him have profited, but they could not fail to be imitators, and they and their like have sensibly diminished the mass of human suffering and lengthened many lives. The same may be said of other operations. Moreover, Apollo's bow is not always strung, and only the few very elect can always be striving for higher things. Therefore we would enter a plea for the capable but merely imitative surgeon, for there are not nearly enough geniuses to go round and perform the barely necessary surgical operations. But as to the insufficiently trained surgeon who is unconscious of his own deficiencies, Sir Berkeley Moynihan's denunciation of him and his doings will, we do not doubt, be generally approved. Though it is not given to all of us to be keen observers, able to recognize and pick out from the myriad pebbles on the shore of the sea of knowledge the one scientific gem of purest ray serene washed up by the waves or dredged by another seeker from the unfathomed depths of the unknown, yet all may strive to cultivate their talents so as to acquire the power of grasping truth when it is presented to them.

[1] BRITISH MEDICAL JOURNAL, February 19th, 1927.

## FOOD SUPPLY AND THE STATE.

THE Section of Preventive Medicine at the Annual Meeting of the British Medical Association at Edinburgh discussed the question: "What duties has the State in relation to the nation's food supply?" Professor Edward Mellanby introduced the discussion by a paper which is printed at page 633 of this issue. The paper is so suggestive and provocative on a matter which is becoming almost daily of more and more importance, and is rapidly being recognized as such, that it is almost a duty to direct attention to it. Moreover, it may be of advantage—with a view to some practical outcome—to make certain distinctions, and clear the ground of some possible misunderstandings, if the subject is to be regarded purely as a question of preventive medicine and public health.

As Professor Mellanby points out, "the duty of the State" is an ambiguous phrase, but even if it be taken to mean "what an ideal State should do" in this matter, not everyone will agree that it is desirable for the State to perform all the functions which he would appear to assign to it. An individual's conception of the duty of the State with respect to food supply and cognate questions will necessarily vary with his general political ideas as to the relative position of the State and the individual citizen as regards other matters—as to whether, as is commonly held in this country, the State exists for the sake of the individual, or whether, as is the confessed belief of some foreign Governments, the individual exists for the sake of the State. A perfectly well nourished citizen is no doubt desirable in either case, but it may well be held that something less than perfect health with reasonable liberty of individual action is even better than perfect health secured by the almost complete suppression of individual liberty. Of these questions some are political and others economic, and they must be separated if there is to be a profitable discussion on the practical duties of the State as to matters connected with food supply in such a community as ours. As an example of such confusion of thought we may take a statement which emerged in the course of discussion at Edinburgh, though it was not made in this crude form by Professor Mellanby himself: "Making a profit out of milk contaminated with tuberculosis was a disgrace to the community, since such milk was not only the cause of very many deaths, but of an amount of pain and misery that could not be computed." Surely the deaths and the misery are caused by the tubercle bacilli, and not by the fact that a profit may be made by the sale of milk which happens to contain them; and the sale of such milk might be regarded as a disgrace to the community even if the State or a local authority were selling it at a loss. There is, too, no guarantee that a dairyman or a milk roundsman employed by the State would be any more clean or honest than one employed by a company. The question of the propriety of private trade for profit, especially in those things which are necessaries of life, is a highly controversial political subject which it is desirable to keep quite distinct from the question of what action can be taken by public health authorities—central and local—to see that food supplies are pure. The latter is the public health problem.

Again, it is no legitimate criticism of the State, or of a Government department, that it does not make itself responsible for *ex cathedra* statements of what is to be regarded as the final truth concerning dietetics, or any other subject which is susceptible of scientific investigation and on which there is not a consensus of scientific opinion; nor that it does not take steps to keep itself officially informed, even in advance of scientific opinion itself. Professor Mellanby seems to claim that it is the duty of the State to do both these things. He suggests the establishment of a new official "Board of Nutrition," "a strong and representative body of nutritional experts," whose duty it would be to present to the Ministry of Health "new knowledge on nutritional matters" and "the best and the latest advice as to the relative importance of new discoveries," even in advance of their publication by laboratory workers, and prior, therefore, to their discussion in scientific circles; and to issue to the public "an official announcement of the facts" and "a reasoned statement declaring the relative importance of all the points raised." A strong case can be made against official action of this kind, though there is everything to be said in favour of State help towards research and State encouragement of the spread of knowledge. Such public knowledge can, however, in our view, be better secured by education and discussion than by the promulgation of official dicta, or by the enforcement of stereotyped official dietaries at prisons and Poor Law institutions, and in connexion with infant welfare centres.

If these things be admitted, there still remains a vast field in which State action with regard to food supplies is necessary and can be very effective. There is the securing of a sufficient supply of suitable foodstuffs in the event of dearth from war or any other cause; the enforcement of proper conditions of transport, storage, and handling; the prescribing of a pure and adequate content and condition, whether chemical, bacteriological, nutritional, or "vitaminous"; the supervising of the living sources, whether animal or vegetable, from which essential food supplies are derived; the active helping of research of all kinds; the encouragement of reasonable health propaganda by public or responsible bodies; the enlargement of educational facilities with regard to domestic and personal hygiene and to the art of cookery, both through the elementary and secondary schools and technical classes and through school nurses and health visitors and the medical profession. All these are strictly matters of preventive medicine and public health, and offer opportunities abundantly enough for action by the State and by those who are either officially or unofficially concerned therewith, irrespective of any particular political or economic faith, and for scientific discussion free from any undue regard for possibly premature pronouncements of what is to be regarded as orthodox.

### SIGHT AND DRIVING.

THERE has been some correspondence lately in the Times on the relation of the sight of drivers of motor cars to accidents in driving, and our contemporary, in the course of a short leading article, said: "The view is expressed that 'the vast majority of road accidents are due primarily to defective eyesight on the part of the pedestrian or the driver.' The evidence on which this conclusion is based is not given, nor any attempt made to distinguish one kind of ocular defect from another in relation to the causes of accidents, but even allowing for these omissions, an issue of real importance has been raised." The caution shown in this comment is wise. Certainly sight is a master factor in driving; but to assume that because gross defects of sight make driving impossible and walking dangerous, therefore smaller defects are responsible for accidents to drivers and walkers, is rash, unless defects of vision are clearly defined. The word "sight" commonly

connotes ability to distinguish objects of a certain size or fineness of detail. Such a connotation is altogether too limited in this regard. Safe progression for driver and walker in ordinary daylight demands that the sight should have a threefold quality: visual acuity, field of vision, and binocular vision. Obviously a driver must have acuity sufficient to see the pedestrian; but a pedestrian, and even a chicken, is a relatively large object; to the walker the car is even larger. The visual acuity demanded by such recognitions is low. The field of vision is another matter. The errand boy walking along the street enthralled in a penny dreadful looks not at passers-by nor at the kerbstone, yet he neither bumps against us nor stumbles at the kerb: his peripheral field (where "acuity" is negligible) gives him a sense of the position of things that means safety. Binocular vision and balance between the eyes is an even finer matter than acuity or field: it gives the sense of size and distance or position; the instantaneous and unconscious judgement of these is measured by the subtle feel of the neuro-muscular effects produced by the combined movements of the eyes, together with the impressions of visual acuity and of position in fields. That judgement tells us where we are and where others are. It is the sense which leads to skill in many walks of life and in games; it makes the good shot with the gun, the tennis champion, and the safe flying man; it is also the chief physical asset of the good driver. Yet a fourth requisite is a good light sense—that is, ability to see in a poor light. There is as much variability in this as in visual acuity, but, unlike the latter, there is no correction for defect of light sense, though it may easily be depressed by poor health or indiscretions. It varies also with errors of focus, for the use of glasses reduces it, especially high concave and convex lenses; so that the correction of an error of focus by glasses, which may give standard visual acuity, does not always make the wearer of the glasses a safer driver. Such a bare sketch of what "sight" is gives but a poor view of its complexity. Nor does it touch upon the interrelation of sight and muscular co-ordination—foot, hand, and eye of driver, and foot and eye of walker. Nor does it so much as hint at the overriding power of nerve control which is suggested in the term "reaction time"—that power of response which makes two persons who show a general equality in equipment so far apart in capability. We recall these facts of physiology because, unless there is some sense of the complexity of "sight" and its interaction with body movements, no standard or test of sight of genuine value will be arrived at, but a test of some part of the whole will be stressed, such as defective visual acuity (so easy to determine), and a situation possibly more dangerous than the present be produced; for a certificate of fitness, if it be wrong, is an added danger. To call upon the Legislature to institute an effective test of sight for drivers on any scientific scale would be asking an impossibility. A minimum test of acuity, of field, of balance, and of light sense would take a prohibitive time. But even if it could be instituted we do not believe it would materially reduce road accidents, for we cannot agree with the statement that "the vast majority of road accidents are primarily due to defective eyesight." Accidents known to be due to bad sight do occur, but they are rare. A man steps in front of a moving car, and his record shows that he has advanced glaucoma; a woman does the same, and she is nearly blind with senile cataract. But for the most part persons with such serious defects keep out of harm's way. Many more accidents are due to a visual anaesthesia: "seeing ye shall see, and shall not perceive," because the mind behind the eyes is away far off from the road. This visual anaesthesia, or wandering attention, has caused the death of not a few drivers and walkers, and there is no cure for it. All our reactions vary from time to time, so that a test one day may be valueless on the next. Ill health, unwise indulgences, and fatigue (such as is caused by too long driving) produce wide variations in "reaction time." One driver is made jumpy, so he handles his car injudiciously and it skids; another becomes too slow, and he runs into a collision. The driver who has done a long run has a peculiar risk on entering a vast city like London; he may be tired, yet keyed up to his touring speed, and a sudden change to slow and intricate traffic is demanded. The readjustment is difficult, and some drivers are wise enough to stop a minute in order to break continuity. It may be asked, If these things be so, what is the use of testing the sight of drivers of locomotives, omnibuses and tramcars, or of seamen? Sight tests for engine drivers and seamen are in a different category; these aim at ensuring two necessities for these men—keen sight for minute or distant objects and for colour. Omnibus and tram drivers' sight must be wider, especially the former. Certain companies require tests of visual acuity, but in addition the student drivers are under such observation during their training that there is brought into effect a wide range of tests of field, of balance, and of judgement, so that the unsafe man is weeded out early. If a test of car drivers, besides those of public utility carriages, is to be instituted it should follow similar lines. It should be a practical test, and it could be so devised as to include a judgement of reasonable acuity, of good field, of balance, and of light sense in many varying circumstances. All these reactions could be ascertained by a practical exercise, not merely in a room with test types. Nevertheless, it would only certify fitness or otherwise at the time of the test, and it could give no security for future fitness.

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## INDIRECT ACTION OF IRRADIATION ON THE EMBRYO.

For several years before his death Dr. T. S. P. Strangeways had been engaged in the study of the action of *x*-radiation upon cells growing *in vitro*, and the results of the researches were published in his book on *Tissue Culture* and in two communications to the Royal Society in association with F. L. Hopwood and H. E. H. Oakley. These researches had reference to the direct action of the rays, but latterly he turned his attention to their indirect action—that is to say, that, if any, which results from the physiological disturbance of the whole organism. In this research he worked in connexion with Miss Honor Fell, Ph.D., and a joint paper has recently appeared in the *Proceedings* of the Royal Society (B, vol. 102, 1927), in which the existence of an indirect action is clearly established. The experiments consisted in irradiating fowl's eggs which had been incubated for different periods (twenty to twenty-five hours, six days, seventeen days) and comparing the histological condition of the embryonic tissues immediately after the irradiation and after incubation had been allowed to proceed for further periods of some minutes, hours, or days. In the embryos of twenty to twenty-five hours examined immediately after irradiation the only observable effect was a great reduction in the number of mitotic figures. After twenty-four hours' further incubation after irradiation the tissues had recovered to some extent, development had advanced, and there was a variable amount of abnormal mitosis; but cell degeneration was usually extensive, and more prolonged incubation was associated with necrotic and cystic changes. In six-day embryos examined immediately after irradiation mitosis was reduced, and broken-down cells were numerous in all the tissues; after eighty minutes' further incubation mitosis was rare or absent, enormous numbers of cells were broken down, and the vessels were thrombosed. After twenty-four hours mitosis was absent and the majority of the cells had broken down, causing a partial disintegration of the tissues. The effects were similar, but less

pronounced, in seventeen-day embryos. Destructive changes were more marked in the older embryos, which were more highly organized and in which the circulation was established. On the other hand, it was shown by further experiments that the tissues of six-day embryos, when explanted *in vitro* soon after irradiation, still contained many cells capable of undergoing mitosis and continued growth, and that therefore the cells of a six-day embryo were no more susceptible to the action of *x* rays than those of an embryo of twenty to twenty-five hours. The exaggerated destructive effects in the case of the six-day embryo appeared to be due to some indirect action, and might not improbably be attributed to the thrombosis. On this hypothesis the destructive changes might be assumed to be caused by the accumulation of toxic products of metabolism or to the absence of the normal gaseous interchange in the tissues. That the former was not the case was proved by explanting normal tissue in an extract of irradiated six-day embryo incubated for twenty-one to twenty-four hours; tissue growth was in no degree hindered under these conditions. On the other hand, the results of experiments in which irradiated embryos were incubated for twenty-four hours while exposed to air (by removing them from the shell) instead of *in ovo*, indicated that the death of the cells was due, in part at least, to an absence of gaseous interchange in the tissues of the irradiated chick when incubated in the shell; the tissues exposed to the air grew readily when explanted *in vitro*. Such inhibition of gaseous exchange *in ovo* would result from the clotting of blood in the vessels shortly after irradiation as above described, although it is unlikely that it is the only destructive effect of radiation, since even in embryos of twenty to twenty-five hours recovery was only temporary.

## MEDICAL EDUCATION IN THE TRANSVAAL.

Dr. Raymond A. Dart, dean of the faculty of medicine in the University of Witwatersrand, Johannesburg, contributed to the *Journal of the Medical Association of South Africa* for July 23rd an interesting account of the development of medical education, including post-graduate teaching, in this part of South Africa. So far back as 1903 the establishment of medical and dental instruction in Johannesburg was projected, and, after some delay, a standing committee for medical education was appointed in the Johannesburg General Hospital in 1914; three years later the School of Mines became the University College, Johannesburg, and the first year of a medical curriculum was inaugurated. A complete dental course was provided in 1925. Meanwhile, regulations for the Diploma in Public Health had been drawn up, and in 1926 post-graduate courses for this diploma were started. Johannesburg offers exceptional facilities for instruction in tropical medicine and hygiene, since it is surrounded by tropical and subtropical areas. It is thus the one large centre of European medical training where a wide range of tropical diseases can be studied on the spot where they occur; moreover, it contains a large European population from which post-graduate students can be obtained. Dr. A. J. Orenstein was appointed lecturer in tropical medicine and visiting physician in tropical diseases, and, pending the formation of a tropical disease unit in the general hospital, arrangements have been made for a number of beds to be under his charge. The course of instruction in tropical sanitation and hygiene has been designed by Dr. Charles Porter, one-time medical officer of health for Johannesburg, and the courses in tropical pathology and pathological chemistry are being given by Dr. Sutherland Strachan, Dr. Annie Porter taking charge of the parasitology, including protozoology, helminthology, and entomology. The last two teachers belong to the staff of the South African Institute for Medical Research, and are also lecturers in the medical school. The greater part of the laboratory work of the course is conducted in the Institute buildings, with the cordial co-operation of the director, Sir Spencer Lister. Diploma courses in tropical surgery, ophthalmology, dermatology, and pharmacology are being arranged.

## THE HUMAN LIVER FLUKE.

The human liver fluke—*Clonorchis sinensis*—has been known to medicine since 1875, but it is only within comparatively recent years that extensive investigations into the bionomics of this very serious parasite have been undertaken. The most recent and by far the most complete of these is a monograph just published by Drs. Faust and Khaw in Peking.[1] The life-history of this parasite follows the cycle now known to be typical of all flukes—that is to say, it passes an essential asexual part of its life outside the body of the host in a particular species of fresh-water snail. In this particular fluke the myriads of cercariae which escape from the snail either die or become encysted in the flesh or under the scales of some species of fish, and apparently any species of fresh-water fish will suffice as the second intermediate host. On being swallowed by the definitive host the little fluke leaves the cyst, and, crawling up the bile duct, reaches the liver, where it settles down and becomes mature. Like so many of the parasites of man, this species is apparently really a parasite of carnivorous animals, and throughout the Far East dogs and cats are extensively infected. Man is only parasitized in certain limited areas in Japan, Korea, Southern China, and French Indo-China, where he has the habit of eating uncooked fish. Northern and Central China have heavy infections in the intermediate hosts, but there are practically no infections in human beings. Drs. Faust and Khaw are mainly concerned with the infection in China, where the chief endemic centres are Canton, Hong-Kong, and other parts of the Kwantung Province. The epidemiological evidence collected by these observers points to the mulberry districts as the important areas of this infection, just as Cort and his colleagues[2] have previously implicated these districts as the centres of hookworm infection in China. The infection is caused by eating uncooked or partly cooked fish, because of taste, or for religious reasons, or to ward off cholera, or even because the cost of fuel to cook the fish is prohibitive. The fish become infected from the snails, which in turn become infected from the night-soil. In those areas where the human disease is important it is, curiously enough, almost non-existent in animals, and man must therefore provide his own infection. Elsewhere, where animals are heavily infected, fish are also, but they are always thoroughly cooked before consumption. In Southern China, therefore, it is possible to disregard reservoir hosts in combating the disease, and to concentrate on the human infection. Prophylaxis will develop along several lines—education, sanitation, and specific therapy. Education would consist in teaching the people to cook their fish thoroughly, but as practically all species of fresh-water fish are infected, the eradication of the parasite on these lines would, it is considered, prove very difficult. Nevertheless, cooking would entirely eliminate the disease. An attack on the pre-multiplicative stage in the egg would, it is thought, be more hopeful. Sanitation and disposal of night-soil will prevent the infection of the essential intermediate hosts, and Faust and Khaw point out that a considerable amount of human faeces passes into the fishponds, and directly or indirectly provides food for the fish. Treatment of this night-soil with 0.07 per cent. of ammonium sulphate not only destroys the eggs of the fluke, but actually increases the value of the soil as a fertilizer. It does not seem to be practicable to attack the

[1] Studies on *Clonorchis sinensis* (Cobbold). By E. C. Faust and O. Khaw. *Amer. Journ. Hyg.* (Monographic Series, No. 6).
[2] British Medical Journal, 1927, i., p. 807.

snail intermediary at the present time. No satisfactory drug has yet been found with which to treat the fluke in man, but experiments on animals suggest that gentian violet may provide such a substance. The dye definitely kills the parasite, but before it does so it causes a great rise in egg production. Though the results are promising, it is too early to advocate the use of this drug in human clonorchiasis.

## ADRENALINE AND VASO-DILATATION.

IT has long been known that the injection of very small amounts of adrenaline produces vaso-dilatation, particularly in a denervated limb, but it was believed until recently that the vaso-dilator effects were secondary to the liberation of histamine somewhere in the body, probably in the lung. Dale and Richards[1] have now shown that the injection of a small amount of adrenaline (0.0004 mg.) into the aorta of an anaesthetized cat produces conspicuously larger expansion of a denervated leg than five times the dose of adrenaline injected into the jugular vein. The latent period also is much shorter when the arterial route is employed. These experimental results suggest that the vaso-dilator effects are due to the arrival of the adrenaline itself in the arterial blood of the limb. One argument in favour of the view that the vaso-dilatation is produced by a secondary liberation of histamine in some part of the body has always been the apparent impossibility of demonstrating this effect in a perfused limb. Dale and Richards have now overcome this difficulty, and have shown that when the hind leg of a cat is perfused with fresh, defibrinated cat's blood and the volume of the limb recorded, the injection of minute amounts (0.0001 mg. or 0.00005 mg.) of adrenaline into the arterial stream produces definite dilatation followed by constriction. In this case, as the circulation of the perfused leg is no longer in connexion with the general circulation, there can be no question of the effect being brought about by the liberation of histamine in the lung or in any other organ, and it must be concluded that the vaso-dilatation is due more directly to the presence in the arterial stream of the adrenaline itself.

## "THE BIRTH OF MANKIND."

SIR D'ARCY POWER, the surgical leader of those members of our profession who in their leisure hours are peacefully penetrating the realms of bibliography, has now done his colleagues (and particularly those obstetrically minded) good service in publishing, with twelve fine illustrations, the scholarly paper he read to the Bibliographical Society on January 17th, 1927, on "The Birth of Mankind or the Woman's Book."[2] This much-sought-after treasure of medical bibliophiles, and the earliest known work in English on midwifery, was "newly translated out of laten" in 1540 by Richard Jones, "a diligent and studious clarke," from the *De partu hominis* (1532), which in its turn was the translation of *Der Swangern frauwen und Hebammen Roszgarten*, written in 1513 by Eucharius Rösslin, the Stadtarzt or city physician of Worms. It is disappointing that nothing more is known of Richard Jones, but there is good reason to believe that his original manuscript of *The Byrth of Mankynde* is still in existence, for it was sold at Sotheby's in 1865, and is probably in a private collection; at any rate, it is not in five of the most likely libraries in this country. Sir D'Arcy Power gives a detailed description of the numerous editions which appeared between 1540 and 1654, and of the last he remarks: "The lying title-page, which is poorly printed and otherwise quite uninteresting, says 'The Fourth edition Corrected and Augmented.' It is not the fourth edition, it has not been corrected, and it certainly has not been augmented." The title-page of the first edition—dedicated to Katherine Howard, who in July of that year (1540) was married to "the most myghty sapient Christen prynce Kynge Henry the VIII"—is extremely interesting on account of its ornaments in four panels, as is shown in one of the seven reproductions of the various title-pages. There is also an interesting account of each of the printers and publishers of *The Birth of Mankind or the Woman's Book*, and the reprint closes with a comparison of the ornamental initial letters as a means of distinguishing the various issues. This addendum, which did not appear in *The Library*, must have been a labour, but one of love, and there can be no doubt that this paper, like all Sir D'Arcy Power's writings, proves that the expenditure of much time and trouble on the author's part makes easy and pleasant reading.

[1] *Journ. of Physiol.*, vol. 63, No. 3.
[2] *The Library*, fourth series, viii, June, 1927.

## REGULAR MEDICAL EXAMINATION.

A DIRECTOR of the Family Medical Services, Limited, has taken exception to some comments we made recently (September 24th, p. 560) on an associated scheme entitled the Regular Medical Examination Association. We remarked that there was "some lack of lucidity in the documents issued by those responsible for this undertaking"; and we gave as an instance the difficulty we had experienced in finding out whence the new association derived the funds for its subsistence. We now learn that these funds are derived from the fees charged to subscribers for the medical examination, and that it is proposed to pay the doctor who examines the subscriber 6s. out of the 7s. 6d. paid for examination of the first member of the family, and 5s. out of the 6s. for each other member. In the literature submitted to us there was no hint of these deductions from the suggested fees, and in informing the medical profession of the scheme we felt entitled to call attention to this lack of lucidity. We noted also a further point—namely, that it was stated in the prospectus that the Regular Medical Examination Association had no interest in the financial result of the schemes. We may leave it to our readers to calculate the financial result of the above-mentioned deductions from subscribers numbering, say, half a million. If the scheme gains the popularity of which we assume it is worthy, the numbers subscribing should be even larger. We shall watch with interest the progress of this association. But we are still of opinion that its prospectuses would be improved if the language employed were clearer.

MR. LIONEL COLLEDGE, F.R.C.S., will deliver the Semon Lecture of the University of London in the Barnes Hall of the Royal Society of Medicine, 1, Wimpole Street, W.1, on Thursday, November 3rd, at 5 p.m., his subject being "The present position of laryngectomy for cancer of the larynx."

A SHORT and simple ceremony of interest to lovers of Dickens will take place at the British Medical Association House, Tavistock Square, London, on Wednesday next, October 12th, when the Council of the Association and members of the Dickens Fellowship will stand on the site of Tavistock House, in which Dickens lived from 1851 to 1860, and an inscribed stone marking the site, above a portion of the old foundations, will be unveiled.

THE following lectures will be delivered next month before the Royal College of Physicians of London. Bradshaw Lecture, November 3rd, by Dr. J. F. Gaskell, on "The pathology of pneumonia"; FitzPatrick Lectures, November 8th and 10th, by Dr. Herbert R. Spencer, on "The history of British midwifery (1650-1800)"; Mitchell Lecture, November 15th, by Dr. P. C. Varrier-Jones, on "Village settlements and the tuberculous." The lectures will be given at the College, Pall Mall East, at 5 o'clock.

# Opening of the Winter Session.

## THE MEANING AND METHODS OF SUCCESS.

*Introductory Address given at St. George's Hospital, October 1st, 1927,*

BY

SIR HUMPHRY ROLLESTON, BART., K.C.B., M.D.,
Regius Professor of Physic, University of Cambridge.

[AFTER congratulating the winners of scholarships, prizes, and certificates, and mentioning some of the advantages of competing for these rewards of ability and industry, Sir Humphry Rolleston discussed briefly the element of chance in the success or failure of a medical career. Looking back upon the careers of contemporary students and colleagues, it seemed to him that what might appear to the onlooker to be pure luck was often a capacity to make full use of whatever the wheel of fate brought to the feet. He then considered some of the essentials for a right conception of success in medical life, and the various forms which this success might take—the fashionable and financial, the intra-professional, the scientific and intellectual, the humanitarian and personal. The best form of success for the ordinary man to aim at was to preserve his own peace of mind and respect by the consciousness of honest work well done and duty carried out without fear or favour, by making others happier in body and mind, and by freedom from regrets for any action contrary to the golden rule "Do unto others as you would that they should do unto you."]

### METHODS OF ATTAINING SUCCESS.

The arts of success (Sir Humphry Rolleston continued), like the forms of that consummation, are so varied that it would be difficult to mention them all; there is much shrewd advice in *Dr. Chesterfield's Letters to His Son*, by the late Sir William Dalby, on the fundamental questions whether or not medical practice and, if so, which branch of it, is suited to the character, temperament, and attainments of the individual. Some may be admirably fitted to deal with the sick in body or mind, others specially suited to laboratory investigation of the causes of disease, and so privileged to advance medical science, but less adapted to the complex practice of its art in the wards and sickroom. These decisions are, of course, momentous, for to follow the wrong profession is a tragedy and a sure bid for unhappiness and failure. But when what seems to be the right choice has been made, what are the further essentials? Obviously to start with, as in other professions, a thorough knowledge of the science and art—the two Janus-like faces—of medicine; and not only this, but to remain throughout life students, ever on the look out to observe and learn, for there is no trace of finality about medicine, especially in these days; to give up the student life on qualification is not to remain stationary, it is to go back, while others are going forward.

The final examination at the colleges and the universities only qualifies you to enter on a series of further trials and testings—the equivalents of examinations—of which the candidates may be unconscious but which are none the less effective and decisive, by patients, their friends, and professional brethren; medical life, indeed, is just one examination after another. Mental ability alone is not sufficient, though it goes a considerable way towards professional success; and here it may be interesting to quote Thomas Young. In his discussion of the relation between ability and success there is the following dictum: "However inadequate the possession of superior talents alone may be to ensure the confidence of the public, it must be a mistaken opinion, although it has been asserted by persons of no ordinary observation, that a man of great abilities is morally incapable of being a good physician." The explanation of the failure of ability alone is gently but more clearly explained by that great humanist Osler: "A physician may possess the science of Harvey and the art of Sydenham and yet there may be lacking in him those finer qualities of heart and head which count for so much in life"; and more bluntly in Jacobi's warning "You may be ever so learned and yet an inefficient doctor," for indeed it is easy to be too bookishly learned and deficient in the wisdom of practical life. Peter Mere Latham, one of the great clinical physicians a century ago, when our science and art were infinitely less detailed and specialized than now, expressed a view which at first may seem somewhat surprising:

> "Knowledge may be an encumbrance as well as a help. Many men know more than they are able to wield. There is a point (I believe) in the acquisition of knowledge (and this point varies infinitely in different individuals) beyond which, if more be acquired, the whole mass becomes useless to its possessor. I am acquainted with men who never have *done*, and never can do anything, because they know too much; and I am acquainted with men possessing comparatively small knowledge, so dextrous in its use that they have ridden over the heads of others far, very far, their superiors in acquirements."

Though reading maketh a full man, too much may induce mental dyspepsia, breed excessive obedience to authority, and so destroy any originality and independent thought. Read we should, but let it be methodical with discretion, and accompanied by critical analysis and digestion, so that the state of the stuffed Strasbourg goose be not the result. As a practical method of analysis a written abstract made at the time serves a double purpose—not only does it impress the details on the tablets of the mind much more effectively than mechanically underlining the book when sitting in an easy chair, but it is most useful for future revision. It is a common mistake to measure the amount of work by the clock; the real criterion is not the number of hours spent, but the degree of concentration brought to bear on the subject. Concentration produces the greatest effect in the minimum time and is the economical secret of the successful and busy man.

There are, in addition, other factors to be considered, especially the knowledge of men and women, which is so important in the treatment of the sick. Though, like most epigrams, "one-quarter of savoir and three-quarters of savoir-faire make the successful practitioner" may be an exaggeration, there can be no doubt of the value of the personal equation in gaining the confidence of patients, their relations, and professional brethren. A man should, of course, have the requisite professional knowledge, but he must also be able to make full use of his acquirements. This necessary personality is not shown by a bedside manner with a suggestion of pompous superiority; it is the result of getting inside the patients' minds so as to think their thoughts, feel their feelings, and thus understand their mentality and anxieties so thoroughly that the medical man is obviously their friend, with their interests so entirely at heart that nothing else counts. This is not an actor's mask, but the outward and visible expression of true charity and forgetfulness of self. I would like to subscribe to the following from an address given by my father in 1874 when distributing the prizes at St. Mary's Hospital Medical School:

> "I believe that the rule 'put yourself in his place,' based on what modern philosophers call the principle of altruism, but what is found expressed plainly enough in much older language than theirs, is the rule which, if I were confined to the choice of one single guiding maxim to be given to a young doctor just entering upon the responsibilities of practice, I should choose for that maxim. Sympathy is truly called a divine gift, and it does assuredly give a superhuman power. I presuppose, of course, patience in investigation and carefulness in ratiocination; but such is often the obscurity, intricacy, and complexity of a medical problem that in the ultimate resort it is upon intuition rather than upon syllogism that its true solution depends. It is to the man who has the touch of genius, that strength of imagination which enables him to put himself in the patient's place and thus do full justice to him, that there 'ariseth up light in the darkness.' It is for want of all this that 'great men are not always wise.'"

It is not enough to regard the patient as a machine out of order and an interesting problem in pathology; the man as well as his malady must be studied in order to be properly treated.

The faculty of inspiring confidence, like the love of children and dogs, may be inborn, for there undoubtedly are men highly esteemed and of acknowledged ability, but whom none of their friends think of employing professionally. A want of appreciation of the patients' state of mind, which is naturally focused on their ailments, may allow the doctor to discourse on his hobbies and private interests; they are, of course, important for his own well-being, but from the patients' point of view his *raison d'être* is solely to discuss their urgent needs. No doubt attempts to distract them from themselves have their place and value, but the time for this is after, not before, a full—often, it must be admitted, tedious—hearing and consideration of their troubles so as to unburden their minds and ensure complete satisfaction. In doing this there must be calmness without coldness, decision without dour dogmatism, friendliness but firmness. It may be difficult to steer between saying too little and talking too much, and while avoiding garrulousness there is the temptation to imitate those who by a sententious or somewhat cryptic phrase get out of a difficult situation for the time but seldom satisfy their patients' wants. Honesty and truth are essential, but what may at the time seem the whole truth should not always, in the light of human fallibility and his best interests, be communicated to the patient; thus a death sentence given bluntly on what may prove to have been insufficient grounds benefits neither the patient nor the doctor. It is well to remember that a doctor's dictum is not forgotten easily by his audience; and so, though often pressed for a premature opinion, it is wise to refrain from speculative prophecy, which of all mistakes is the most gratuitous. In making mistakes, as inevitably all must, it is better to err on the side of optimism than of pessimism. It was said of the late Sir William Osler that "he never left a sickroom without leaving behind renewed hope."

The doctor's relation with other medical men (popularly spoken of as medical etiquette or ethics, with a thinly disguised dislike and a suspicion of a mysterious trade unionism) is in reality a very simple matter—obedience to the golden rule of treating other colleagues as we would wish them to treat us. In carrying out this elementary principle there is nothing more obvious than total abstinence from adverse criticism of other medical men. To maintain your own opinion is right and proper, to depreciate the advocate of a different view not only savours of a weak case, but is an act of treachery to a profession the motto of which should be team-work. Some rather elementary people seem to have the delusion that by undermining the reputation of others their own will be left standing out in bold relief, not realizing that such prominence may be of a kind other than is hoped—namely, bad as well as bold, and far from advantageous to their interests. Before judging of what another medical man is reported to have done or said it is instructive to bear in mind how rumour may transform your own actions and remarks out of all recognition. The expression of unkind thoughts about another is a further step, and so commits the speaker that it has a boomerang-like effect, for whenever they meet he pays the embarrassing penalty of discomfort and realizes that "evil communications corrupt good manners."

### Importance of Good Health.

Almost as important as common sense and a sympathetic and healthy mind are good health and physique to withstand the strain of hard, continuous work. To avoid illness is no easy matter among the numerous exposures to infection in times of epidemic disease, especially when overworked. Doctors should not only advise, but in their own interests set a practical example in personal hygiene, proper recreation, exercise, and holidays, in spite of the numerous difficulties that surround them. From insomnia, headaches, and dyspepsia born of irregular and hasty meals a man may become angular, forgetful, and deficient in the qualities which make for his success with trying patients. The habit of keeping fit should be maintained during student life by combining, as the best men so often do, wisely organized work with active games, thus gaining, in addition to professional equipment, experience and an imperturbable bearing in the give and take, the competitions, and the team-work of later life. On the other hand, great things have been accomplished by medical men crippled or physically handicapped in one way or another; incapacity in one respect may, by compensation and concentration, result in a high degree of excellence in another direction; the bodily weak may become a mental giant, and those ill adapted for success on general lines may, by intensive study in a narrower sphere, become specialists of eminence.

Terence's line "Homo sum; humani nihil a me alienum puto," applies most certainly to our humanitarian calling; but although wide culture, literary activities, and hobbies are good for the soul, these are for private use and not for parade. There is widespread belief, often no doubt erroneous, that a man cannot excel in more than one line, and so when a doctor is known, for example, as a writer of verses, most people are inclined to consider him too good a poet to be their common-sense guide, philosopher, and friend in unromantic medical matters.

A method of attaining success, though it may seem rather negative and involve some repetition, is to avoid the conspicuous causes of failure, such as mental idleness, unbusinesslike habits, forgetfulness, unpunctuality, habitual discourtesy, drug addiction, and intemperance. Against the last two rather blatant vices a warning may seem quite superfluous, but unfortunately not a few able men, already in good positions and reaping the harvest, have become shipwrecked on these vulgar rocks. No doubt there are often extenuating circumstances, such as anxiety to keep going when ill, hard driven, and exhausted, recurrent pain, insomnia, and acute mental distress; but the cause does not concern the public, who in any event would not be inclined to excuse the results on that score.

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## THE DOCTOR'S HIGH CALLING.

*Introductory Address at the London School of Medicine for Women*

BY

R. G. HOGARTH, C.B.E., F.R.C.S., LL.D.,

Senior Surgeon, General Hospital, Nottingham; Past-President of the British Medical Association.

I should like to begin with a brief reference to the London School of Medicine for Women itself. May I not say without presumption that a pioneer educational institution which has survived the strains and stresses of fifty years is bound to have acquired an established reputation? It either stands high or low in the general esteem. It has either made good or it has failed to rise above mediocrity. Well, there is no doubt about the status of your school, which, in conjunction with the Royal Free Hospital, holds its own in the best company among the medical schools of the British Empire. It is, indeed, an infant compared with Bart's or with Guy's, which have their traditions of centuries. But, after all, when we talk about traditions in connexion with medical schools, let us remember that their best traditions are scarcely older than the still recent days of Simpson and Lister, and that the London School of Medicine for Women was born amidst the epoch-making discoveries which marked the Renaissance period of British medicine. So it was under a lucky star that your pioneers burst their way through all the obstacles and vindicated the abstract right of women to enter the medical profession by proving themselves apt learners and practitioners of the art of healing.

### Right of Women to Practise Medicine.

The root of the opposition, I suppose, was sex prejudice, strengthened by apprehensions of intensified competition. Not that I dislike strong prejudices, either in men or women. They are often the very salt of life. But we must not hug them too long or too close, and, above all, we must be ready to recognize when a case is really proved.

I only recall this now senescent controversy because,

after all, it was the *causa causans* of the foundation of this school, and without casting the slightest aspersion on the system of co-education prevailing in some other medical schools this great teaching school for women students alone is a proud and happy achievement. There are, indeed, some whose zeal for the equality of the sexes disdains any recognition within the profession of the differences of sex. That may be good logic, but we do not live by logic alone, and I prefer either the masculine or the feminine to the neuter gender. It is no use pretending that men are not men, and that women are not women. And the more I think of it, the more I am appalled at the waste that the world for so long has made of its women—the squandering of their rare qualities of mind and heart, the neglect of their immense capacity for service to humanity. Sex equality had to be stressed when sex equality was denied, but in the future the debate should rather be as to what men can do best and what women can do best, apart from the large common field of endeavour which is open to both. It is division of function, according to special capacity, which makes for good organization and efficient service. The widening ranges of the special diseases of women and the special ailments of children seem to belong naturally to women. But we may be sure that these divisions will not be settled by reason alone. The idiosyncrasies, the instincts, the jealousies of human nature are no less powerful arbiters.

### Advice to New Students.

And now let me turn to those among you who are newcomers to these halls. You have made your crucial choice of a career, and I congratulate you upon having chosen Medicine. What Wordsworth in his sonnet to Haydon, the painter, said of creative art is no less true of the art of healing: "High is our calling, Friend!" And not only high, but hard. You will find no soft options in the study of medicine, if you have entered here with a desire, not merely to qualify, but to excel, and to earn with your fees the goodwill and gratitude of your patients.

Your new studies will naturally engross the greater part of your time, and those who come quite fresh to science may not have much leisure for other subjects. I would urge you not to neglect altogether those studies which still bear the resonant title of "Studia Humaniora," to distinguish them alike from divine theology and the mundanities of law and mathematics. An exclusively scientific training often leaves something to be desired in the way of mellowness and ripeness, if I may so express it, and the professional man or woman of to-day suffers serious handicap unless his or her mind is well cultured, well garnished, and sensitive to the impression of what the Greeks called "the beautiful." Do not disperse your energies too widely, but at all hazards avoid narrowness. Most of you, presumably, look forward to general practice rather than to the cloistered specialization of the laboratory. Therefore, read widely of the best. Your medical textbooks contain the rather arid knowledge indispensable for the satisfaction of examiners, but they are markedly deficient in the attractive graces, the uplift, the freshness, and the inspiration that you will find in the best poets, essayists, and novelists. It is not enough for the woman doctor to be distinguished in the street by her spectacles, by her shoes, or by the attaché case in which she carries her instruments. Apart from her professional skill, she should be known by her culture, by her judgement and discernment, by her greater detachment from the idols of the market-place, and by that sure way of approaching a question at issue which is the hall-mark of the trained and balanced mind. I am not suggesting that you should sit loosely to the hard desk of the lecture room. Far from it. I only advise you to make your medical school your academy in the larger and older sense of the term, and not to allow your conscientious devotion to physiology, bacteriology, anatomy, and the like, make you forget that the Muses and the Graces also require the ritual of an occasional libation and handful of crackling salt. Even in your purely medical studies do not be too one-sided. Do not be in too great haste to specialize. The foregrounds of medicine are many and spacious, and you cannot know them too well; and remember that the prime secret of all education is still enshrined in that briefest, most searching, and most comprehensive of all the aphorisms, "Know thyself."

Passing from these general observations, I wish specially to congratulate you on the golden moment at which you begin your study of medicine. Though in one sense the young people of each succeeding generation are necessarily the heirs of all the ages, you are exceptionally fortunate to be their inheritors now. The only time, perhaps, when the prospects of those entering the profession in the spirit of scientific adventure or with a real enthusiasm for the welfare of their fellows were in any degree comparable with the present was in the early days of Greek culture, when that "divine old man," as he has been well called, the Father of Medicine, Hippocrates of Cos, first disentangled medicine from priestcraft. He first started the medical profession on its separate individual course, with a set of ethical commandments which, after nearly twenty-four centuries, still find as general an acceptance as though they had been dictated in thunder and graven in stone. Medical science was then launched under the fairest auspices and with the brightest hopes, and mankind never suffered a more grievous calamity than when the new science drifted into the shoals and quicksands from which it was only effectually rescued in recent times. Medicine, returning once more to Nature, rejecting all methods save that of observation, and all interpretation save that of strict causation by natural causes, has now gloriously renewed itself. Sure of its direction, it looks forward with great confidence to an ultimate control—if the word be not too strong—of disease, though not perhaps of natural decay, and to an ultimate penetration to the very springs of life and the fount of being.

### The Confidence Reposed in the Profession.

The medical profession, moreover, possesses, to a degree hitherto unknown, the general confidence of mankind. Men and women in all ages have run with anxious faces to the doctor in the hour of trouble, because no Stoic doctrine has ever persuaded shrinking flesh and blood to be reconciled to pain. Yet the keener wits were never deceived by the professional cloak of mystery with which the doctor shrouded himself from too close a scrutiny and which he dared not put off in the public eye. The reason of so marked a change from a credulous incredulity to implicit confidence is to be found in two words—scientific method.

The Temple of Healing has been rebuilt from its foundations. The fountains of pure water have been cleared from the rubbish of centuries, and through its porticos and halls blows the fresh clean air of free inquiry. Scientists have, indeed, been driven to invent a jargon of their own, because they need such a bewildering multitude of new words with exact and precise meaning; but there is still only one set of scientific principles, and even in the labyrinthine complexity of modern medicine there is a grand and austere simplicity. The world may be able to afford the luxury of several religions; it can only afford one Science of Medicine, and the unscientific systems which survive in the Far East in their old association with religious ritual belong to another and a different category. Even if we have not cast off all our inherited errors, at least we are now emancipated from the devastating theories on which the world was doctored for centuries. Observation and experiment are the only high road to an exact science, and it was early discovered that "experiment is slippery and judgement hard."

This is the age of scientific adventure, and I should like to remind you of what Sir Isaac Newton said of his own supreme discovery of the law of gravitation. He compared himself to a child playing on the seashore who had had the good fortune to find a prettier and more polished pebble than his fellows, but he added that he had not so much as launched his boat on the broad ocean which called the more venturesome to the discovery of continents still unknown. Such pebbles are being found in increasing numbers to-day, because there are many searchers, and Science knows better than before where to look. A few months ago we were celebrating the centenary of Lister's birth. Before long the minor centenaries will crowd upon

us so fast that the world will be too busy to give them due observance. Every department of medical science seems to multiply unceasingly, and still there is no hint of end or limit to the new knowledge that may be found in respect of each. It is a perpetual search for causation. There was surely a prophetic vision of the triumphs of scientific medicine in the majestic line of the Roman poet,

"Felix qui potuit rerum cognoscere causas."

"Happy is he," said Virgil, "who can pierce to the causes of things, and so trample under foot all fear, and fate inexorable and the din of greedy Acheron." The river of death still flows dark and turbid, but the noise of its waters grows less, and the Fates have been compelled to abate many of the worst rigours of their dread sentences. In the search for causes Science has found her cures.

We are not all discoverers, of course, whether of pebbles or of continents. In medicine, as in other professions, the majority belong to the rank and file who do the everyday mending and patching of common humanity. A vast routine of ailment, slight and serious, runs with the sun its appointed course. Men and women obstinately continue to transgress the laws of health, and, in spite of daily articles on diet, we may count with certainty on the regular commission of those dietetic irregularities which produce their mixed crop of disorders in the human frame. So long as the pleasant vices are apt to be the most injurious, our professional occupation will remain. Indeed, the more people read about health and diet, the more they will gossip about their pains and symptoms, and the more assiduous clients they become. You need have no apprehensions, therefore, of any lack of patients.

### The Medical Profession and the State.

Even to-day you may hear the pessimists lament that there are not enough good jobs to go round. But do not allow such dismal forebodings to depress your natural enthusiasm. Whatever mediocrity may say, there is always room for conspicuous merit at the top, even if at times the scramble is intense and the waiting tedious. In no profession, I believe, is the percentage so high as in the medical of those who make a fair success out of their practice. Some sixty years ago Sir James Paget was at pains to follow up the careers of a thousand medical students who passed through the medical school at Bart's. He found that of those who actually reached practice, 66 per cent. made a very fair success of it, meaning by that that they were able to maintain themselves as professional men in adequate style. I feel sure that if a similar investigation were undertaken to-day the percentage would work out even higher, and that it could be shown to have risen in a specially marked degree as a direct result of the National Health Insurance Act, which has proved a good friend, not only to those who participate in its benefits, but also to the general practitioner, whose work has contributed so largely to its success. The State to-day not merely recognizes, but earnestly realizes, its direct responsibility for the health of the people, if only because an ailing people means a discontented and an inefficient people, and a constant drain without return upon the national expenditure. We suffer in this world for sins committed against the laws of health and decency; the resultant diseases are of human making, and not one is fairly chargeable to Providence. This may seem almost axiomatic to the younger generation, but it was a real discovery to a generation which has not yet wholly passed away. The average doctor of to-day, therefore, is no longer engaged in purely private practice; a considerable percentage are servants of the State in one form or another. This association of the profession with the State will increase and not diminish, and it opens out an ever-widening horizon of honourable and profitable employment.

Consider, too, the same association of the State with the profession in connexion with the more scientific side of medicine. Research would fare very badly without the State's assistance, inadequate as it is, but those who are ambitious for large incomes had better not take up laboratory or research work, which always reminds me of the swarming activity of bees and ants, narrowly intent on the infinitely little. This work is nevertheless of infinite importance and demands a self-sacrificing devotion from which few emerge to name and fame. The consolation of the majority must be that all scientific discovery, however humble, contributes to the imposing pyramid which the rare master builders raise. It is only when something spectacular is done, or when something fits with a click and completes the cross-word puzzle which carries the big prize, that the limelight is thrown on to the research worker. But the work goes on with unhastening step, and I hope that in spite of what I have said some of you will be lured into the enchanted—if inadequately remunerated—regions which give entrance to the penetralia of Nature, remote enough from the everyday world, yet subtly connected, even with what seems most distant and non-related, by an endless chain of direct causation.

But no doubt the majority of you will join, not the noble army of martyrs to the cause of pure science, but what I may call the goodly fellowship of practising doctors and surgeons. You will find even here scope for the exercise of all the altruism in your composition. The old idea is not yet wholly dispelled that the doctor, unlike the lawyer, ought to be so pleased with his success, if a cure results, that he might reasonably forgo his fee. Perhaps you may feel like that once, or maybe twice, in your early novitiate, when a doubtful and difficult diagnosis, to your great relief, turns out to be correct, but with growing confidence and success you will find new beauties in the text that the labourer is worthy of his hire. I do not believe in the importation of trade union methods into professional life. Whatever is good in trade unionism we doctors already possess, and the British Medical Association, of the working of which I have had invaluable experience during the past year, exists for the protection of the just interests of the doctor. Let me urge you, therefore, to join the Association as soon as you are qualified for admission. It is the strongest physical bond of union in the profession. Its central administration is kept in constant touch with all its Branches, and through the Branches with each individual member. It is co-extensive with the British Empire in its organization, and, while it promotes the sense of fellowship and comradeship, it also possesses a cutting edge, which is kept bright, sharp, and aseptic for the occasions when the profession has to defend its rights against encroachment.

### The Spirit of Fellowship.

But there is also another and more spiritual bond between doctors, and that is the common spirit which pervades their ranks. I do not wish to pitch the note too high. It would be fantastic to pretend that doctors are immune from the ordinary failings of humanity. But I do think that their calling brings into continual play their finer feelings and instincts, and that doctors are specially sensitive to the call of duty. The public may poke its fun at the Faculty, as a Faculty, especially when it is consciously playing its *beau rôle* on the raised dais, but they know that the doctor's fine coat will be off in a trice when there is emergency work to be done and seconds are precious.

The medical art can do much and will do more, and you may be sure that, as you grow grey in its service, you will see it held in ever-increasing honour. I would only counsel you, as the specialist extends his sphere on every side, not to be tempted to neglect the close, careful, and anxious method of clinical study, which remains no less essential than before. The forward march of science will not absolve you from hard work, and the clinical wards of a great hospital and the teaching of an expert clinician are still the indispensable foundation of the doctor's training, without which all the book learning in the world is of small practical use. The apprenticeship may seem long and the course toilsome and arduous, but it has been well surveyed, and the short cuts which look promising are apt to prove fallacious.

I began by quoting to you Wordsworth's famous phrase, "High is our calling, Friend." I will end with the three closing lines from the same sonnet, exhorting you in all earnestness

> "Still to be strenuous for the bright reward
> And in the soul admit of no decay:
> Great is the glory—for the strife is hard."

## MIDDLESEX HOSPITAL.

### ADDRESSES BY MR. VICTOR BONNEY AND LORD JUSTICE SARGANT.

The ninety-third winter session of the Middlesex Hospital Medical School was opened on October 4th with a meeting at the Queen's Hall, when the chair was taken by Mr. S. G. Asher, chairman of the school council, an address was given by Mr. Victor Bonney, and the prizes were distributed by Lord Justice Sargant.

Mr. Victor Bonney entitled his address "The paths to the stars." Life, he said, was a battle, and its weapons were a host of higher cerebral cells in the anterior part of the cranial cavity. The number of these cells in each individual probably varied little; their quality varied little also, idiots and geniuses apart, so that the result depended upon the initiative or driving power which put these weapons of the intellect into action. This power might be aspiration or, on a lower plane, ambition, or a just combination of the two. The larger portion of this cerebral army—its infantry, so to speak—must be trained to attain high technical ability, but this by itself rarely secured the highest results. An army consisting solely of infantry would be a very imperfect force. As in warfare other branches of the service were needed, so in the medical profession foresight, tact, judgement, and a faculty of sympathy must come into action. Mere professional excellence by itself would very rarely bring success. While professional knowledge must be the main object, other intellectual attainments must not be overlooked, and the main difficulty was to determine in what proportion the forces should be employed to ensure complete victory. One question to be settled was whether it was better to recruit, train, and put into active service all the intellectual units at once, and so adopt "shock tactics," or make successive drafts on the available raw material and wear the enemy down by cumulative pressure. Success was not merely a matter of getting to the front but of keeping there, though, to be sure, it was far more arduous to get there than to keep there. Of the material honours and distinctions in any profession, it was the first that needed striving for; the second was always more cheaply bought, and when it came to the fifth or sixth the professional collectors of such merely found it necessary to sit still under the flowing stream of favour. While the winning of the first position was the most important, a reserve of force must be left for the holding of this and for the advance to further positions; some mental potentialities also should be conserved for the days of retirement. Innumerable workers had built a marvellous temple of medicine; their example must be emulated, and if another lofty spire could not be added by every student, let him at least add one sound stone to the structure by his individual effort. The greatest success of all was to leave one's profession better than one had found it.

Lord Justice Sargant then presented the scholarships and prizes. He congratulated Middlesex on the great response that had been made to the appeal to the public for the half-million fund for rebuilding, and afterwards offered a few remarks on the position of medicine and surgery in general. He had had occasion to observe during the last few years what an immense amount of work and study was involved in the attainment of a medical degree, for his daughter had lately qualified for practice. It was not merely the great amount of practical work that had to be done, but also the sheer mental discipline to be undergone by those who wished to acquire a knowledge sufficient to enable them to give relief to the public at large. And what had often occurred to him, as it must to all thinking persons, was that after the qualified practitioner had gone through that elaborate and extensive course of study and practice he was met, when he actually entered his profession, by a whole host of persons who attempted to rival him. These were persons who tried to carry on what they called the healing process, whether bodily or mental, without any real and recognized test of their abilities, even in the particular subject-matter with which they professed to deal, and certainly with none of that general medical knowledge which seemed to be essential to anyone who aspired to exercise the art of healing upon his fellow creatures. Not merely did these persons run the risk of doing actual damage to those whom they affected to treat, but in almost all cases they lulled their patients into a false security and prevented them from seeking qualified medical aid until, in many instances, the disease had made such progress that the resources of treatment were not adequate to deal with it. It seemed to him that there existed in this country a liberty in this matter which almost amounted to licence, and which was considerably greater than that prevailing in most Continental countries. Whether there should be some legislative interference, and if so, to what extent, was a very difficult question. In the meantime, at any rate, the qualified medical profession had the protection of its own etiquette; the profession stood together as one body to resist encroachments of that sort. Hard cases had been heard of from time to time, cases boosted by the newspapers regarding someone who had fallen under the ban of the General Medical Council and had not deserved his fate. His own experience was that a great many cases which sounded very adequate on paper, or when one side only had been heard, and the facts had been loosely stated and put forward in an exaggerated way, crumbled to pieces when they came to be adequately examined and tested. In any event he felt that, even if hard cases occurred, there was truth in the maxim that hard cases made bad law, and that it was the general interest of the community which had to be considered, and not the particular hard case. Coming as he did from a profession in which a rigid etiquette was insisted upon, he felt the greatest sympathy with the medical profession when they on their side insisted on an equally rigid and effective etiquette.

Finally, Lord Justice Sargant ventured a remark on the extreme danger to which the medical profession was exposed at the present time with regard to the certification of lunatics. During the last few years there had been a number of cases in which medical men, having acted quite reasonably—having done that which ninety-nine out of a hundred reasonable men would have done in the circumstances—found themselevs compelled into the courts and put to the most extraordinary expense and harassment of mind. It seemed to him that as matters stood at present the risks that these men ran were greater than they ought to be called upon to incur, and he would rejoice if something were done to relieve them from a responsibility which they felt bound to exercise in individual cases for the protection of the public. No doubt, so far as the financial aspect was concerned, their defence was in many cases undertaken by the medical defence societies, but it seemed to him that those societies really ought not to be called upon to this extent, and that the necessary protection might well be given by law, at least to a greater extent than it was accorded at the present time.

The Dean of the school (Mr. Eric Pearce Gould) reported that very remarkable success had fallen to Middlesex men this year in the higher examinations. In the last examination for the F.R.C.S.Eng. seven out of the nine Middlesex men who presented themselves were successful. He announced that the Baron Studentship had already been awarded, and the first student had been working in the Ferens Institute for some months, and that a scheme of collaboration had been entered into between the Institute of Biochemistry and the scientific laboratories of Boots Pure Drug Company, Limited.

## WESTMINSTER HOSPITAL.

### ADDRESS BY DR. AINLEY WALKER.

The ninety-fourth year of the Westminster Hospital Medical School was inaugurated on October 3rd, when Dr. E. W. Ainley Walker, dean of the School of Medicine in the University of Oxford, delivered an address on the scientific side of medical training.

Dr. Ainley Walker said that followers of medicine had advantages over students in other professions; medical knowledge was always advancing, and work in this field must ever be full of interest. Medicine was both a science

and an art, though in this country it was to the art that the greater attention had been paid; the application of science to it had not, until comparatively recently, received the attention it deserved. But unless the student obtained a thorough knowledge of the principles of the fundamental sciences and some working acquaintance with the ascertained facts in those departments of learning, he would find himself, after ten or twenty years of practice, so completely out of touch as to be unable to apply properly new facts and new methods in the prevention, diagnosis, and treatment of disease. The speaker looked forward to a time when every student of medicine would take a degree in pure science as part of his medical studies, and in the meantime he urged that the training available in the fundamental sciences should not be unduly curtailed or hurried; all the time that could possibly be afforded should be spent on the purely scientific side.

The curriculum of the medical student had lately undergone much modification. With the growth of knowledge and the increase of specialism the subjects with which he must gain some acquaintance had inevitably multiplied, and there was some danger that the balance might be upset and the student find himself less able to acquire the sound knowledge of general medicine and surgery necessary to the education of the doctor. A smattering of information about an infinitude of little special subjects must never be mistaken for the education which would fit a man to become a competent physician. It was on the scientific side of medical training that the greatest blots remained, and Dr. Ainley Walker referred especially to the comparative neglect of pathology and the still graver ignoring of experimental pharmacology. With regard to the former, lately there had been some awakening, though pathology did not yet take that important place in the curriculum of the ordinary medical student to which it was entitled. Experimental pharmacology was still almost unheeded, although the subject was one which to-day offered almost limitless possibilities; a wide field, for instance, had been opened by the increase in knowledge of organic and synthetic chemistry. This was a field which, because of its neglect by the medical faculty, had rapidly become commercialized in certain countries, with results which were highly detrimental to real progress in therapeutics and the treatment of disease. It was hardly too much to say that a new kind of quackery had sprung up, a quackery which was all the more dangerous because it was the doctor rather than the public who was the intended victim. The doctor's attention was continually drawn to much vaunted but ill tried remedies, and puffs and specious advertisements with regard to these invaded his breakfast table.

Dr. Ainley Walker urged the student, whatever might be his subsequent line in medicine, to cultivate for himself as a hobby some special study in which he could take particular interest. He also referred to the pressing need for the fuller development of post-graduate study and the organization of clinical research. The man who had taken a medical degree was in some ways only at the beginning of learning. If adequate post-graduate facilities were generally available in the schools very many medical practitioners would sooner or later gratefully avail themselves of the opportunity of returning from time to time for the refreshment of their knowledge, the adjustment of their outlook, and the awakening of that renewed activity of mind which resulted from contact with the work and spirit of a teaching hospital. Moreover, post-graduate teaching was in a high degree stimulating and encouraging also to the teacher; its establishment would lead to redoubled activity in the field of clinical research, a department of medicine in which at the present time somewhat less progress seemed to be made in this country than in others. "Whether in the days to come" (said Dr. Ainley Walker in conclusion) "you devote yourselves to the practical pursuit of clinical medicine or to the study of one or other of its ancillary sciences, let your aim be high. The lower rungs of the ladder may be crowded, but there is always room at the top. Strive to attain, but in striving still remember that it is the effort, not the attainment, that has lasting value."

After Dr. Adolphe Abrahams had proposed and Mr. Arthur Evans had seconded a vote of thanks to the speaker the Dean (Dr. A. S. Woodwark) gave some account of the work of the school, laying special stress upon the recent acquisition of a playing field. He mentioned that just under forty students had completed their training and had left the hospital during the last year; the number of students now on the roll was practically the same as a year ago. He also described the post-graduate facilities which had been arranged. Among the prize-winners whose names were announced was Mr. P. A. M. Souttar, winner of one of the certificates and prizes offered by the British Medical Association for an essay by a fifth-year student.

## ROYAL DENTAL HOSPITAL.

### ADDRESS BY SIR WALTER FLETCHER.

The annual presentation of scholarships and prizes at the Royal Dental Hospital of London (School of Dental Surgery) on October 4th was made to coincide with the opening of the John Hampton Hale research laboratory, built from funds allocated by the Dental Board and equipped and endowed by Mrs. Hale in memory of her husband, who was formerly chairman of the hospital. Both duties were performed by Sir Walter Fletcher, F.R.S., who delivered an inaugural address.

Sir Walter Fletcher said that the new laboratory was not only an important addition to the school, but one of the first outward and visible expressions of a striking movement within the dental profession itself. By means of their registration and retention fees the members of the dental profession were contributing to a fund which, on a narrow view, would seem to be damaging to their own interests, for it was used for education, which brought into the field formidable rivals, and for research, which was directed to ensuring that ultimately dental surgeons would have no work to do. In framing its research policy the Dental Board had recognized that, however precise and limited might be the particular professional and utilitarian aims to which dental research was directed, the scientific work by which alone those aims could be properly realized must have complete liberty of range. In the important field of mechanical dentistry the Board had entered into co-operation with the Department of Scientific and Industrial Research, and he believed some really valuable and practical gains had already resulted. He could speak with more direct knowledge of the similar alliance between the Dental Board and the Medical Research Council. There were very few problems in preventive medicine of more importance to the race than those concerning the proper development and preservation of the teeth. Every new gain in knowledge only emphasized the scientific and medical interest of that set of problems. It was the hope of the Medical Research Council that the new laboratory would play a distinguished part in this co-operative scheme of investigation. The value and urgency of this kind of research from the point of view of the citizen and of the nation could not be doubted. Dental imperfections and disease in this country brought, directly and immediately, a quite colossal volume of discomfort, inefficiency, pain, and ugliness; while indirectly disorders of the teeth contributed in many ways besides their immediate and direct effects to specific diseases of the body. It was a commonplace now to say that the improvement of the teeth of the nation was one of the most pressing and outstanding problems of preventive medicine. But while everyone recognized the urgency of the research work, by which alone the present ignorance could be removed, it was useless—perhaps worse than useless—to call for quick and easy results from the investigations. Money was necessary to give freedom of opportunity to scientific workers, and money invested in research rarely failed to gain a satisfactory rate of interest in the long run—in many cases, indeed, a rate of interest fabulously high. But new knowledge could not be bought like a commercial product. It must be the product of the right man in the right place, and of his unfettered labour. Three hundred years ago

Bishop Hall of Norwich had truly said: "There was never good thing easily come by. . . . God sells knowledge for sweat." The true limit to a research programme was fixed, not by the money at its disposal, but by the number of men and women who were fit and available for the enterprise, and those would always be scarce. He pleaded for patience in awaiting results, as well as for catholicity of spirit. Nature's clues hardly ever were found in the straight line. The key to some great advance in dental knowledge might be lying implicit in some work that seemed quite alien in kind.

Dental problems had lately been brought, as a consequence of scientific work, into a new atmosphere of hopefulness and interest. The study of attacks made on teeth by particular agents of disease had proved relatively barren. What was needed was not so much better knowledge of the diseases of the teeth as better knowledge of the health of the teeth and the conditions of their natural resistance. Recent work had increasingly brought dental problems into line with those of the general physiology of the body and the science of nutrition. Clear experimental evidence had been forthcoming that the normal architecture of the teeth, like that of the bones, depended to a surprising degree on the right supply and balance of diet at the time of growth. It seemed also that, whether from the intricacy of their structure or for other reasons, the teeth in their formation were even more sensitive to nutritional conditions than other parts of the body. It was by no means unlikely that dental practitioners in the future would perform a wider service to their colleagues in other medical fields in connexion with that new and sensitive index to normality—that is to say, to health—which the teeth in their formation and repair seemed destined to provide. He thought it no rash speculation that the whole medicine of the future lay in the lap of nutritional science.

Mr. Norman Bennett, who presided, said that Sir Walter Fletcher had uttered a much needed word on behalf of dental research. He had given full and deserved credit to the Dental Board for supplementing the resources of the Medical Research Council in aiding dental research, but the fact was that dental research had been instituted some few years before the Dental Board came into existence. The Medical Research Council was responsible for that movement, and the principal stimulus in promoting such research came from Sir Walter Fletcher himself.

## ST. BARTHOLOMEW'S HOSPITAL.

### ANNUAL DINNER.

The annual old students' dinner of St. Bartholomew's Hospital was held on October 3rd, in the Great Hall of the hospital. The chairman was Dr. H. Morley Fletcher, senior physician, and a welcome departure in the proceedings was the limitation of set speeches in order that full opportunity might be afforded for social intercourse.

After the health of the King had been honoured, the toast of "Prosperity to the Medical College of St. Bartholomew's Hospital" was proposed by the chairman, who faithfully followed the instructions he said he had received to be brief and bright. Beginning with a reference to the origin of the medical college, which was veiled in antiquity, he mentioned that in 1667 an order had been issued for the formation of a library in the hospital for the use of governors and scholars from the universities. Minutes showed that in 1840, at the beginning of the medical year, an address had been given by a member of the staff in the afternoon, followed by one of the earliest dinners on record in connexion with the hospital, and a conversazione afterwards. In 1862 there was an official notice in the *Times* of another dinner held at the Albion Tavern, under the chairmanship of Sir William Lawrence, whose grandson, the senior almoner of the hospital, was a distinguished member of the audience on the present occasion. Since that time dinners had followed each other in regular succession, with the exception of the war period, and Sir William Church, senior consulting physician, now in his 91st year, had, it was believed, been present at no fewer than sixty. Coming to more recent history the chairman referred to the great stride being made in establishing the new surgical block; this would consist of five surgical wards, each with a fully equipped theatre, and would accommodate 250 patients. Every effort was being made to ensure that this addition to an historical hospital should be the finest of its kind in existence. Dr. Morley Fletcher referred appreciatively to the work of Miss Mackintosh, who had now retired from being matron of the hospital; her successor, Miss Dey, returned to the institution where she had received her training in nursing, and was assured of a very warm welcome. Among the losses sustained by the hospital during the previous twelve months were those caused by the deaths of Dr. Claye Shaw, who had been connected with it from 1871 to 1908; Dr. T. S. P. Strangeways, who had been junior curator of the museum before his departure to Cambridge; Dr. L. Phillips; Mr. Alban Doran; and Sir Arthur Shipley. Sir Frederick Andrewes, whose connexion with the hospital had lasted thirty-one years, had retired from the chair of pathology, and regret was expressed also at the departure of Sir Bernard Spilsbury. Welcome was extended to three new professors—namely, Mr. W. le Gros Clark, professor of anatomy; Dr. Hamilton Hartridge, F.R.S., professor of physiology; and Dr. E. H. Kettle, who had returned to London from Cardiff to occupy the chair of pathology. Sir Berkeley Moynihan had received the distinction of being elected to full studentship of the hospital, a mark of appreciation which had only been awarded in two other instances. Congratulations were offered to Dr. Burt White, who had gained the gold medal for obstetrics in the M.D. examination of the University of London. Gratifying progress was being made in the medical school, but its expenses were increasing, and it was hoped that money might be received from outside the hospital for the endowment of the professorial chairs. The chairman added, in conclusion, that, in proposing the toast, he would emphasize the point that "prosperity" denoted the continued production of a very high type of medical practitioner, and the maintenance of the strong spirit of *esprit de corps* for which St. Bartholomew's had always been distinguished.

In a short subsequent speech the chairman proposed the health of the distinguished guests, who included Sir John Rose Bradford; the Regius Professors of Medicine from Oxford and Cambridge (both old students of St. Bartholomew's); Surgeon Vice-Admiral Gaskell, Medical Director-General of the Royal Navy; Air Vice-Marshal Munro, Director of Medical Services, Royal Air Force; Lord Stanmore, treasurer of the hospital; and Sir William Lawrence. The health of the chairman was proposed by Sir Charles Gordon-Watson, and was received with musical honours. An adjournment was then made to the library, where the proceedings became even less formal and more cordial.

## ST. MARY'S HOSPITAL.

### ANNUAL DINNER.

The annual dinner of St. Mary's Hospital Medical School was held at the Connaught Rooms, London, on Saturday, October 1st, the chair being taken by Dr. Wilfred Harris; the guests included Surgeon Vice-Admiral Gaskell, Air Vice-Marshal Munro, and the Mayor of Paddington. Proposing the toast of "St. Mary's Hospital and Medical School," the chairman contributed some reminiscences of his early days as a student and resident before the Clarence Buildings were erected. He sketched the progress of the hospital briefly and remarked that the handicap of inadequacy of beds for patients seemed now at last to be in a fair way to be overcome. The recent acquisition of the "island site" was, he believed, an outstanding event in the history of St. Mary's; it might soon become possible to provide small wards for paying patients, which would not only supply an urgent need but would also be of great value to the clinical and teaching staff. Mr. A. R. Prideaux, chairman of the hospital board, and Dr. C. M. Wilson, dean of the medical school, responded to this toast. Mr. Prideaux, after a tribute to Sir Almroth Wright, passed to

consider the hospital extension scheme, and expressed the hope that many beds would become available before the end of October. The date for the final completion of the work was April 30th, 1928. The scheme included the provision of two operating theatres, which, thanks to the assistance rendered by Mr. Maynard Smith and Professor Pannett, bade fair to rank as the best equipped and most convenient in the whole country. Some sixty beds would be added to the hospital complement, bringing the total number of beds to about 350; St. Mary's would thus be placed in a far better position as regards treatment than it had ever reached before. Moreover, the "island site" which would pass into the possession of the hospital in November, subject to certain limitations under the Rent Restrictions Act, would enable a great step forward to be taken, particularly with regard to the provision of beds for paying patients. It was estimated that the extensions now approaching completion would cost £50,000; of this some £38,000 had already been raised by the efforts of the hospital secretary without a public appeal, and it was hoped that the balance would be forthcoming before the official ceremony next April. Dr. Wilson, confining himself more particularly to the medical school, spoke of its early days, and mentioned that the hospital was attracting an increasing number of students from Oxford and Cambridge. He enumerated the special advantages offered by St. Mary's to those who studied there, and mentioned that a high proportion of recent academic successes had been won by members of the Rugby football club, showing that the increasing athletic prowess of the hospital was not interfering with medical study. The health of the chairman was proposed in a witty speech by Mr. D. C. L. Fitzwilliams, and Dr. Wilfred Harris replied.

## THE BOARD OF CONTROL.

### Research Work in Mental Hospitals.

The sociological and medico-legal aspects of mental disorder have been brought in recent years into such prominence that the scientific aspect has tended to fall into the background, with the result that scarcely sufficient notice has been paid to the steadily increasing amount of research carried on in mental hospitals throughout the country.

For some years now it has been the excellent practice of the Board of Control to publish as part of its annual report an account of this work, consisting of a digest of the annual reports of research departments of every mental hospital in England and Wales. It is embodied in Part II[1] of the annual report of the Board, the publication of which has followed hard on the heels of Part I, of which some account was given last week (p. 606).

The digests occupy forty-four pages, and contain several substantial pieces of research, some of which have already been turned to good account in the treatment of mental disease. Many of these investigations cannot as yet be expected to yield practical results, but, by adding to the general fund of knowledge, may at a later date enable positive scientific conceptions to be formulated. So manifold is the nature of mental disorder and so obscure is its etiology that, no matter along what lines research may be prosecuted, conclusions are difficult to attain.

It is natural that the majority of the work summarized should be concerned with general paralysis, as in this disease we have a known cause and a definite pathology; but even here we are confronted with innumerable problems. The existence of "neurotropic" strains of the spirochaete declared by some workers to explain the vulnerability of the nervous tissues to this infection is not proved. The histopathological findings still await their definite clinical corollaries. The variance of the mental states in general paralysis requires explanation; are they the inevitable outcome of the disease process, or are they the result of the accidental exposure of personal psychological peculiarities? There is also to be sought an explanation of the differentiation of types: the classic delusional type, the depressed, the "pure" dementing type, and those showing blends of organic and schizophrenic psychoses. Lastly, and of more immediate interest, there are the problems of treatment, of the power of penetration into the nerve cells of chemical compounds, of their mode of action, whether treponemacidal or as adjuvants to tissue resistance, and of the rationale of remissions and the correspondence of serological changes with clinical improvement. Indeed, the problems are endless, and it is with interest that we turn to the results of investigation of this disease. The majority of these investigations are concerned with treatment.

From the West Riding Mental Hospital at Wakefield, of which Professor Shaw Bolton is the medical director, comes a note by Dr. J. F. Smyth on the histopathology of general paralysis. Forty cases were examined, and each was followed clinically and verified *post mortem*. A survey of results shows that spirochaetes were most easily found in fairly rapid subacute cases with a clinical history of grandiose delusions and marked physical signs. In cases where spirochaetes were numerous, plasma cell periarteritis was moderate, but where spirochaetes were scanty or absent altogether the periarteritis was gross; this suggests that it is a defence reaction to the invasion of spirochaetes. Vascular proliferation, particularly of the large and medium vessels, seemed to be part of a general reaction and not dependent on the presence of spirochaetes. The presence of spirochaetes in the motor cortex did not appear to bear any relation to the incidence of seizures. The important feature in these cases was the vascular process.

As regards the various forms of treatment, malarial therapy has received the most attention. Dr. Golla, director of the pathological laboratory at the Maudsley Hospital, reports that it is followed by a greater number of remissions and a smaller death rate than occur in untreated cases. Complete remissions occur in about one-third of the cases, but in a much greater proportion if only cases with a history of the disease for less than eighteen months are treated.

From the County Mental Hospital, Whittingham, come observations made during the treatment of general paralysis by the "Whittingham strain" of artificially induced malaria. This strain has been transmitted by direct subcutaneous inoculation through seventy-six cultural generations, comprising over 180 inoculations. The conclusion previously reached was in no way impaired—namely, that the attacks of malaria were not becoming more virulent; from the study of 10,000 blood films it appeared that the morphology of the parasite remained unaltered.

A method of treatment somewhat similar to that by malaria is described by Dr. J. H. Mackenzie of Birmingham City Mental Hospital—the material used being T.A.B. vaccine (Burroughs Wellcome and Co.) administered intravenously in daily doses for ten days, with intervals between for the administration of N.A.B. in four weekly doses of 0.65 gram, three ten-day courses of pyrexial treatment being aimed at in each case. Severe rigors were constantly obtained and temperatures up to 106° were recorded. Vomiting and diarrhoea were prominent features during the early stages, and herpes occurred in a large percentage of cases. No permanent ill effects were noted, and in many cases considerable general physical improvement resulted without, however, any constant alteration in neurological signs of serological findings in the blood or cerebro-spinal fluid.

From the Cardiff City Mental Hospital come the reports of numerous investigations. Dr. Goodall and Dr. Scholberg have been studying the distribution of the nitrogenous compounds in the plasma and cerebro-spinal fluid in mental disease, and Dr. Stanford has been investigating the nitrogen constituents of the blood plasma, the cerebro-spinal fluid, and the urine. The nitrogenous constituents of the cerebro-spinal fluid have never been systematically studied; and there is every likelihood that this work may not only bring to light new diagnostic tests for disease, but that it will help to elucidate the functions of that fluid.

Investigations reported from other mental hospitals

[1] Lunacy and Mental Deficiency. Thirteenth Annual Report of the Board of Control for the year 1926. Part II. London: H.M. Stationery Office, or through any bookseller. 1927. 9s. net.

include studies of cases of pellagra, a disease now more frequently identified than formerly; of Huntington's chorea, and of epidemic encephalitis and its mental sequelae.

Altogether there is much promise in the research work which the Board of Control has here collated. We need not refer to it in detail. Necessarily much time has to be spent in routine laboratory investigations, and especially into the nature of asylum dysentery and of allied infections, where these are prevalent. But the amount of investigation into mental disease is gradually growing. The Board constantly urges that every mental hospital should have its own well equipped laboratory and that every encouragement should be given to medical officers to pursue research into the nature of mental disease. It is a matter for congratulation that the central authority, which has shown itself so constantly aware of the necessity for sociological and legal improvements, should be zealous also in the encouragement of the research workers throughout the mental hospitals in the country.

## MEDICAL DEFENCE UNION.

*Annual Report.*

The annual report of the Medical Defence Union, presented at the annual meeting held at Harrogate on September 24th, an account of which was published in our last issue (p. 608), states that the number of new members elected in 1926 was 1,260, a figure exceeded on only two previous occasions. The total membership now stands at 14,418, and includes 1,138 women.

The report refers to a case in which the Union was called upon to defend two of its members against whom damages were claimed by the same plaintiff for wrongful certification under the Lunacy Act. A successful application was made to have the action stayed under Section 330 of the Act on the plea that there was no reasonable ground for alleging want of good faith or reasonable care. The plaintiff, however, went to the Court of Appeal, which held that the affidavits of his expert witnesses, alleging a lack of reasonable care and in one instance bad faith, could not be ignored, and therefore the order for the stay of proceedings was set aside. The case went to trial, but was stopped before the defendants' case was concluded, and a verdict returned for the defendants. The report points out that the decision of the Court of Appeal that the case must go to trial was based solely on the affidavits made by three medical practitioners, one of whom did not see the plaintiff until nine months after the certification in respect of which negligence was alleged, and the other two not until two years later. "The views expressed in these affidavits, completely negatived subsequently by the verdict, prevented a stay of proceedings at an early stage, deprived the defendants of the protection which the law is intended to give them, and in addition cost the Union nearly £5,000." The solicitors to the Union (Messrs. Hempson) add that "These deponents made no inquiries to ascertain the plaintiff's medical history from the numerous medical men under whose care he had been, but expressed their opinion as to his mental state some years previously on the word of the patient, uncorroborated by any skilled or unbiased person."

One minor matter mentioned in the report is an interesting point touching midwives' cases. A practitioner had been asked to attend a woman in confinement, but declined to do so, and at her request gave the name of the nearest midwife. A week after the confinement the midwife sent for the practitioner under the rules of the Central Midwives Board, and he paid three visits. The local supervising authority then refused to pay the practitioner's fee on the ground that it was not empowered to pay the fee when a practitioner had been called to a case by a midwife whom he had himself recommended. The matter was referred to the Ministry of Health for decision, and eventually the fee was paid. The warnings as to the need for advising patients with injury to a bone or joint to undergo an *x*-ray examination are repeated; it is stated that the council has to deal at every meeting with claims against members who have neglected to take such a precaution.

The report adds that many cases of unqualified practice and false assumptions of medical titles have been investigated during the year, but in no case has the evidence available made it possible for the council to authorize proceedings against the offenders. This is due solely to the present inadequacy of the law. The cases handed over to the solicitors during the year numbered 91, of which 6 were libel or slander actions prosecuted or defended, 32 were defences against allegations of malpraxis, and the remainder chiefly arbitrations between members of the profession. The balance sheet of the Union shows assets amounting to £31,000, and apart from its own funds the Union has effected an underwriting policy with a first-class insurance company to cover claims over a certain limit.

# England and Wales.

### Memorial to Professor Adrian Stokes.

The personal friends and colleagues of the late Professor Adrian Stokes (of whom a full memoir appeared in our last issue) have decided to establish a permanent memorial to him. The precise character of the memorial will depend upon the funds which become available, but the object will be to endow medical research in some form. His friends are convinced that the establishment of a Stokes Memorial Fellowship or Studentship is the only type of memorial which he himself would have approved. The funds will be controlled by Guy's Hospital Medical School, and subscriptions should be sent to the Dean, Guy's Hospital Medical School, London, S.E.1.

### Hospital Extensions in Staffordshire.

H.R.H. Prince Henry, on October 1st, opened extensions of the North Staffordshire Royal Infirmary and laid the foundation stone of the new Haywood and Tunstall War Memorial Hospital. The new buildings of the infirmary have cost about £180,000, of which £130,000 has already been raised. At the opening ceremony Lord Lichfield stated that the infirmary, which was founded in 1766, was the first hospital established in the Midlands. A new ward block has now been erected and provision is being made for the construction of additional wards on the first and second floors, at a moderate cost, should occasion arise. The windows throughout this building reach to the ceiling and open to their full extent. In unfavourable weather fresh air can be drawn into the wards and removed by means of a fan in a tower in the roof. Two electric lifts and a handsome staircase connect the various floors. The nurses' home has been enlarged to accommodate an additional sixty-five nurses, and a room is provided for instruction in the preparation of meals for patients. The *x*-ray department has been reorganized and better arrangements have been made for the protection of operators. Other additions include a new laundry and boiler house, workshops, kitchen, and dining-room, and a new mortuary. Prince Henry referred to the fact that the foundation stone of the existing infirmary buildings was laid sixty-one years ago by the then Prince of Wales, and commented on the great advance in medical knowledge since that time. The foundation stone of the present extension was laid by the King in June, 1925. It is hoped that the new Haywood and Tunstall War Memorial Hospital, which will cost about £35,000, and contain sixty-five beds, will be adequate for the needs of Burslem and Tunstall. For many years the accommodation at the existing Haywood Hospital has been too restricted for this populous area.

### The Papworth Village Settlement.

Reporting on the work in 1926 of the Papworth Village Settlement near Cambridge, Dr. P. C. Varrier-Jones, the medical director, draws attention to the fact that eleven years' experience at this institution for tuberculous patients has shown that the children of infected patients do not suffer from segregation at such a colony, but actually receive benefit. No child has contracted tuberculosis at the settlement, and support is available for the contention that the family, rather than the tuberculous individual, is the unit to be treated in any scheme for dealing with this disease. Interesting details of the work carried on in the village and workshops are presented in the report, with numerous

illustrations. A sick fund started by ex-patients has been able to carry forward a substantial balance on the two years of its existence, which is contrary to what might have been expected. A village hall is in process of construction and the Wesleyan Chapel is now nearly complete. A note on this Village Settlement appeared in the JOURNAL (April 9th, 1927, p. 696), and the important question of employment for the tuberculous, including a reference to the valuable work carried on at Papworth, was discussed at some length on July 3rd, 1926 (p. 20).

# Scotland.

### ROYAL INFIRMARY, EDINBURGH.

AT a meeting of the managers of the Royal Infirmary, Edinburgh, on September 26th, Dr. R. A. Fleming, who had relinquished the position of physician to the institution, was appointed consulting physician, and the managers put on record their regret at the loss of his services, which had lasted some thirty years, first as pathologist, then as assistant physician (1900), and afterwards as physician (1913). At the same meeting various legacies and donations to the hospital were announced, including a sum of £1,000 from Mr. Thomas H. Whitehead for the purpose of naming a "Robert Burns" bed in the hospital.

### HEALTH CONGRESS AT INVERNESS.

The fifty-third annual congress of the Royal Sanitary Association of Scotland was held at Inverness on September 28th. Dr. John R. Currie, M.D., professor of public health in the University of Glasgow, delivered a public lecture on the subject of pestilence. The name, he said, had at the present day lost much of its terror in Britain, and when one traced the course of the plague down to the present day its disappearance from this country was found to be due, not to any definite measures taken for its control, but to the social and unconsciously hygienic uplift which marked the transition from the Middle Ages to modern times. Leprosy had retired before the same good influences. The movement which undermined the position of typhus and typhoid fevers long before there was any accurate knowledge of their cause was an effort aimed at the conditions which attended these diseases. On the other hand, small-pox, measles, and influenza had been practically unaffected by sanitary improvement, and modern medicine had stepped in with a type of protective agency of which vaccination for small-pox and immunization against diphtheria and scarlet fever were outstanding examples. As regarded this hygienic uplift, one of the recent developments was the growing cult of the open air. This had been greatly extended by field sports, athletics, and outdoor games, which were shared by increasing numbers in every walk of life. A moor or a golf course was a safer place when infection was prevalent than a theatre or picture-house. The cult of the open air had derived a great impetus from the institution of summer time, which kept people out of doors and added an hour to the possibility of life in the open air. The recent appeal by the Duke of York for the provision of public playing-fields was a further recognition of this cult, and these would be great improvers of physique and moral. With regard to the need for better houses, it should be remembered that infection did not go through partitions, and therefore for houses of equal floor space three rooms were better than two and four better than three. With regard to infections of more modern notoriety like poliomyelitis and encephalitis lethargica, the lecturer thought there was room for an uplift among members of public health committees, who, by combination and arrangement of hospital service, could place specialized treatment within the reach of those who required it.

The congress was continued on Friday, September 30th, when Dr. A. S. M. Macgregor, medical officer of health for Glasgow, president of the congress, delivered his presidential address. He said that there were daily indications that resistance to the advance of hygiene was weakening in every direction. Somewhat hurried legislation had been evident in the last few years, induced by the need for keeping pace with advances in scientific knowledge, and there was a growing acceptance by the public of the laws of elementary hygiene and an improvement in many of their habits and customs. Public health to-day wore quite a different aspect from that it had fifty years ago. There was general agreement that the time for the unification of the health services was ripe. The essential of successful administration of health services was now seen to lie in the direction of interdependence rather than of independence. Administration in the more recent aspects of child welfare, school medical inspection, housing, and health propaganda was having a slow but sure educative effect. A result of this was the remarkable increase in the expectation of life which had occurred within the past fifty years. Between 1870 and 1921 seventeen years had been added in Glasgow. He thought that in this a large share should be allotted to increasingly high standards in general medical practice. To those whose business it was to study the factors which influenced the public health, nothing had been more remarkable than the reduction in the average consumption of alcohol.

A discussion on the future of local authority hospital services was introduced by Dr. J. Parlane Kinloch, medical officer of health for Aberdeen, who said that impending reform of the Poor Law medical services had given a fresh stimulus to these discussions, but there was also a general consensus of opinion that the existing hospital situation was in some respects unsatisfactory. He had come to the conclusion that the future development of the hospital services of local authorities was to be found within a regional hospital system consisting of four systems grouped round the four medical teaching schools of Scotland. It was hazardous, he thought, to forecast in any detail the ultimate regional hospital organization that would emerge, but the affiliation of all bodies at present providing health services would appear to be the logical outcome. It was not, however, desirable that this unification should be attained by any revolutionary process, but rather by the gradual growth of co-ordination.

A discussion on the administration of the Tuberculosis Order of 1925 from the public health point of view was opened by Mr. Hugh Begg, county and district veterinary inspector of Lanarkshire. The present Order, he said, should be strictly enforced throughout the country, and the Ministry of Health should give increased encouragement and financial assistance to the establishment of additional tubercle-free herds. Later on the Tuberculosis Order should be amplified to give powers for the slaughtering of all old cows, unless they were certified to have recently stood the tuberculin tests. Dr. Gerald Leighton, medical officer to the Scottish Board of Health, referred to the improvement of milk supplied in recent times, and expressed regret that some local authorities were slow to realize their responsibilities in regard to the Tuberculosis Order.

### DUNFERMLINE AND WEST FIFE HOSPITAL.

A scheme has been on foot for some time to extend the Dunfermline and West Fife Hospital at a cost of about £50,000, and the first step was taken on September 24th, when Lady Veronica Bruce and Mrs. Andrew Carnegie cut the first sod on the site of the wards to be erected. The hospital was opened in 1894 as the Dunfermline Cottage Hospital, and since then has been enlarged on two occasions. The extension at present proposed will include two wards to accommodate forty-two patients, a new operating theatre, an out-patient department with out-patient operating theatre, bacteriological and pathological laboratory, and an x-ray room and installation. After the ceremony of cutting the first sod, Dr. Allan Tuke, senior medical officer of the hospital, presented to Lady Veronica Bruce and Mrs. Andrew Carnegie miniature gold spades inscribed to commemorate the occasion. The ceremony was also made an opportunity for holding a "Students' Day" in aid of the extension fund, at which over £100 was collected in Dunfermline.

# Correspondence.

## THE ETIOLOGY OF EPIDEMIC ENCEPHALITIS.

Sir,—It was hardly to be expected that my brief review of the experimental work on epidemic encephalitis should pass without criticism. It is obviously a subject on which different opinions may be held, even by those who have had time to digest the enormous mass of literature dealing with it. I am, however, sorry that I seem to have been unfair to Professor McIntosh's experiments on the transmission of the disease to animals. I passed over this work in a sentence, including it, perhaps unjustly, with that of Loewy and Strauss and of Kling and his associates. I was influenced in this by earlier reviewers, and by the similarity of the cage-to-cage infection in his monkeys with the epizootics associated with the *Encephalitozoon cuniculi* which had occurred in other laboratories. I had not seen his reply to Flexner's review.

There can be little doubt that he infected two monkeys out of four with an encephalitic virus. From the first infected monkey he also inoculated three rabbits, of which one died and showed histological evidence of encephalitis, another became ill but recovered, and the third remained well. I have been unable to find any paper of his dealing with further experiments on rabbits, and therefore do not understand his reference to 70 per cent. positive results on these animals. His remarks on the dissimilarity of the lesions in transmitted encephalitis with those associated with the *Encephalitozoon cuniculi* are counterbalanced by Dr. Woodcock's letter, in which the thesis is advanced that the *Encephalitozoon cuniculi* is a reaction of the rabbit's tissues to a multiplicity of viruses, "including that of epidemic encephalitis." Although it is quite likely that the bodies to which this name has been given are merely one stage of a parasite which is invisible in other stages, it appears in the highest degree improbable that so distinctive a phenomenon should be common both to an epizootic disease of rabbits and to transmitted encephalitis lethargica.

I did not make it clear in my paper that the "encephalitozoon" infection might be associated with nervous symptoms, as it was in Kling's experiments. This no doubt depends on the virulence of the virus. That the "encephalitozoon" bodies were found only in his inoculated animals, and not in the controls, proves nothing except that the conditions for cage-to-cage infection were wanting in his animal house. It is, of course, possible that Kling has transmitted either herpes virus or other encephalitic virus along with the *Encephalitozoon cuniculi*. My point was that the presence of the "encephalitozoon" in the brains of a large proportion of his inoculated animals greatly reduces the value of his results.—I am, etc.,

J. G. Greenfield.

Pathological Laboratory, National Hospital, Queen Square, W.C., Oct. 3rd.

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Sir,—Dr. Greenfield's remarks at the Annual Meeting at Edinburgh (British Medical Journal, September 24th, p. 535) on the pathology of this condition were certainly as controversial as a study of the reports of other observers would appear to warrant. The present position as to the etiological value of experimental encephalitis is not easily estimated and cannot certainly be dismissed lightly.

Few observers have succeeded in isolating and transmitting a virus similar to that of Levaditi, whilst he himself claims that with his virus an encephalitis can be produced even by genital inoculation in the same manner as syphilis. It is generally agreed that a "spontaneous" encephalitis can occur in rabbits, but this epizootic type appears to be due to a sporozoon; it gives rise to renal lesions and it cannot be transmitted directly to other rabbits. McCartney, who has investigated this condition fully, failed to transmit it.

I should like to draw attention to the work of Szymanowski and Zylberlast-Zand,[1] who used on rabbits a number of viruses obtained from different sources—namely, the virus of idiopathic herpes and viruses obtained from infective cerebro-spinal fluid, nasopharyngeal washings, and brain emulsions of human beings dead from epidemic encephalitis. An encephalitis, either acute or chronic, was the almost constant result of these experiments, and these rabbits showed no renal changes *post mortem*, and the condition could be transmitted from rabbit to rabbit. In other words, the encephalitis produced was not similar to the epizootic encephalitis of McCartney, but resembled that which has occurred in man during the last decade.

It is interesting to note that many of these animals infected with what one might call for the purposes of argument "human" encephalitis showed marked vestibular phenomena, the importance of which I have had the opportunity of describing elsewhere[2] when occurring clinically in man.—I am, etc.,

Richard I. Poston, M.D.

Oldham, Oct. 1st.

[1] *Brain*, 1923, 46, 49.

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## MOBILE LABORATORIES IN THE WAR.

Sir,—With reference to the obituary notice of the late Professor Adrian Stokes, which appears in your issue of to-day, several statements appear therein which unfortunately have no historical basis as to fact, and, in justice both to the living and the dead, I think should be corrected.

With regard to mobile laboratories, the construction of the first of these was undertaken by the Medical Department of the War Office directly after the outbreak of war in August, 1914. In that year it functioned in battle areas north of the Lys, and thereafter was entirely responsible for the bacteriological investigations in Belgium of all cases in the outbreak of typhoid fever among the Belgian civilian inhabitants in the winter of 1914-15 in the zone occupied by the British Second Army and also by the French army on our left flank. This laboratory was in charge of a territorial officer who had been seconded from the 3rd City of London Field Ambulance, and, later, was appointed to act as my sanitary officer, and was given special authority to carry out all necessary measures for controlling and suppressing the epidemic by the Belgian Ministry of the Interior. This epidemic was considered to have terminated by the beginning of June, 1915.

The second laboratory—a converted motor caravan—was furnished by the Lister Institute, who, within a week of the declaration of war, had made a collective offer of its workers for service under the War Office, followed by an offer of a mobile laboratory, the latter being immediately accepted. This laboratory was in charge of Major S. D. Rowland and proceeded to France, being stationed at General Headquarters at St. Omer, where it remained until its transfer to the Second Army, when it was attached to No. 10 Casualty Clearing Station at Remy Siding and opened out for work early in July, 1915. It was upon the occasion of this transfer that Adrian Stokes first came to the Second Army, he being attached to Major Rowland's mobile laboratory and acting as his assistant until 1916, when Rowland was transferred at his own request to Etaples to investigate cerebro-spinal fever, subsequently contracting the disease there, from which he died. My appreciation of Stokes's services and ability was such that I had no hesitation in securing his appointment as commanding officer to succeed Rowland, this being in fact Stokes's first command of a mobile laboratory.

By this time some five mobile laboratories had become connected with the Second Army, and I would here say that the repeated successful detection and isolation of typhoid (and other) carriers was regarded by all of them without exception as an ordinary laboratory achievement.

Owing to their increasing numbers, it became necessary in 1915 to number serially the mobile laboratories. In this way the first War Office built laboratory became known as No. 4 Mobile (Hygiene) Laboratory and the Lister Institute converted caravan as No. 1 Mobile (Bacteriological) Laboratory.

In justice to all concerned I would like to make it clear beyond all doubt that Stokes was not transferred to the Second Army until *after* the termination of the epidemic.

[2] *Brain*, 1926, 49, 482.

He took no part, officially or otherwise, in the operations conducted by the medical service of the Second Army under my direction for dealing with the typhoid epidemic amongst the civil population of Belgium which occurred in the winter of 1914-15.

The history of this epidemic remains to be written; it is the story of a grave and widespread outbreak—numbering thousands of cases—amongst the civil population of a foreign country in the occupation of Allied (and British) troops in an intensely active war zone, in which British medical officers were given the honour and the responsibility for conducting the whole of the operations necessary for coping with the disease. They did so successfully, and I would like to take this opportunity to make an appeal to all in possession of relevant documents and records (whether copies or originals) to communicate with me in order that some organization might be set up for duly recording its history and noting its clinical and epidemiological lessons.—I am, etc.,

ROBERT PORTER,
Major-General (Ret.), formerly Director of Medical Services, Second Army, B.E.F.

27, The Avenue, Beckenham, Kent, Oct. 1st.

## HOSPITAL POLICY.

SIR,—The Poor Law medical service has been hitherto so comparatively inarticulate that perhaps you will allow one who has had experience of several voluntary hospitals, and who is now on the staff of one of the most progressive of the Poor Law hospitals, to make a few points. The reason for this silence is not far to seek. The Poor Law medical service has had no such traditions or academic standing as those of the voluntary hospitals, and has suffered from that inertia inseparable from a whole-time service ostensibly controlled by a lay committee, coupled with the fact that only recently have the cases treated in these hospitals become similar to those in voluntary hospitals.

After reading and appreciating highly the report of papers and discussion at the Edinburgh Annual Meeting on "The future relation of municipalities to the voluntary hospitals" (October 1st, p. 575), it seems to me that a few further scarcely debatable points might be worth mentioning.

1. The actual governing body of any hospital, voluntary or municipal, is, and must be, the medical staff. The voluntary hospitals have long recognized this, and the results speak for themselves. The Poor Law system has suffered from this authority being vested in only one medical man, fortunately of high capabilities as a rule; but this, of course, will change during its evolution. But in all cases (voluntary, Poor Law, or municipal services) the ostensible governing body—the lay committee, which has the last say—is composed of enthusiastic and well-meaning amateurs, whose hobby it is to devote their spare energies to such excellent work. Such a vital service as ours, however, cannot be run as a hobby. It behoves, therefore, the medical men of all services to take a keen interest in this question.

2. Mr. Herbert Eason refers to the difficulty of giving chapter and verse in support of the statement that the voluntary hospital with a medical school works at a higher professional standard and at a higher pressure than a Poor Law hospital. Is it not high time that the Ministry of Health insisted on the publication of a proper medical report on the work of Poor Law hospitals, in place of the absurd travesty of an annual report at present issued to and by the guardians? It is not medical, and therefore valueless; such an innovation would, I think, prove that Mr. Herbert Eason's deductions are erroneous, at least as regards this hospital.

3. The relations between outside medical practitioners and the members of the staff of this hospital are of the most cordial nature, largely owing to the attempts at out-patient and follow-up treatment made by the latter, entirely on their own initiative and largely at their own personal expense. No fears need exist as to the danger of antagonism from general practitioners to a further improvement in the hospital services. They have free access to the patients whom they send us, and are welcomed, but very few have the time to take advantage of this.

4. The question of the control of the proposed unified system is of primary importance. I should like to suggest that Mr. Herbert Eason's simile of the elephant and the eggs should be reversed, making the voluntary hospitals take the place of the elephant. Given that point No. 1 is true, this must be so; is it wise? Medical men are but human, and has it been proved that the voluntary system is exclusively for the benefit of the patient? This is the point at issue. The provision of an efficient and well paid professional staff is quite another matter. At present many patients get preferential admission to voluntary hospitals by being able to pay a consulting fee beforehand, and the livelihood of the member of the voluntary staff depends on his impressing the student, the future general practitioner, with his medical wisdom and power. Hence one of the difficulties in arranging for students to use the immense field of clinical material in Poor Law hospitals. No blame is to be attached for this, but is it perfect, and should it be perpetuated by giving the voluntary hospitals control of the unified service? I should suggest that the staffs of the Poor Law hospitals who are qualified academically and in experience should have equal voice.

Finally, have the voluntary hospitals reached such an acme of perfection as to make them the ideal? Experience of Belgian, German, and Austrian hospitals, and a credible report of American hospitals, make me answer in the negative. Surely this is the time to take a very wide view and, holding neither to the rather sentimental voluntary system nor to the matter-of-fact Poor Law system, to incorporate the good points of all systems in a new hospital service. The medical profession as a whole is ready for it, and the public would welcome it.

May I add that I hold no brief for the full-time Poor Law medical service—very strongly the reverse?—I am, etc.,

J. S. M. CONNELL, F.R.C.S.Ed.,
Gynaecological and Obstetric Officer.

Dudley Road Hospital, Birmingham, Oct. 2nd.

## POOR LAW MEDICAL SERVICE.

SIR,—My review of Poor Law as a medical career (September 17th, p. 519) seems to have opened up the vexed question of Poor Law medical administration in general. Dr. MacWilliam (October 1st, p. 614) appears to voice some of the sentiments of the editor of the *Poor Law Officers' Journal* and of someone who writes regularly in that paper over the pseudonym of "Medico." Dr. MacWilliam's statement that there are instances of cordial relations in large mixed institutions is probably true, but the converse is also unfortunately true. Further, he does not state whether his own appointment is full-time and resident; also, Liverpool has its separate infirmary, which makes a considerable difference. He also remarks that friction is not invariably the fault of the lay staff. I will go further and say that it is not the fault of either side, but of a system which in a certain type of institution makes a nice atmosphere difficult or impossible.

Dr. Sunderland (October 1st, p. 614) comes much nearer the root of the matter when he states that, of over 600 unions in England and Wales, only about fifty have separate infirmaries. These figures should speak for themselves. He also refers to the lack of liaison between Poor Law doctors. This point is of vast importance in the interests of professional organization.

The interests of doctors in Poor Law are not sufficiently centralized in the British Medical Association. Some of them belong to the Poor Law Medical Officers' Association, some to a medical superintendents' association, some to the Poor Law Officers' Association, some to more than one of these, and some probably to none. I belonged to the Poor Law Officers' Association until I realized that in the event of a clash between medical and lay interests in Poor Law there is only one sound defence—our own Association. The Poor Law Officers' Association could not be expected, by the very nature of its membership, to guard our interests as our own Association could and would do. I had convincing proof of this over my own appointment. I consider that the British Medical Association should have all available information from any smaller medical association in Poor Law, and so be at all times fully informed. There

is good reason to suppose that such information will be extremely useful.

In order to clarify the position in institutions as I see it, they may be conveniently grouped under three heads:

1. *Large Unions;* having a separate infirmary with a medical superintendent, and a general institution with a master and matron. This is the obvious and ideal plan.
2. *Small Unions;* having one general institution for all purposes, with a master and matron; no training school for nurses, no resident doctor. This system works very well, and relations between master, matron, and part-time doctor are easily maintained on a cordial footing.
3. *Intermediate Unions;* large enough to employ a full-time resident doctor, having a training school for nurses and frequently a consulting staff, and doing a fair amount of acute work. The number of these "mixed" institutions can be imagined from Dr. Sunderland's figures, and they are the type of institution to which my original letter applied adverse criticism. My view is that, once an institution reaches the stage outlined above and becomes a recognized training school for nurses, its administration should be changed. The best remedy is the building of an entirely separate infirmary if the town can afford it, leaving the master and matron in charge of the general institution. So acute has this problem become that attempts have been made to separate the two administrations while still more or less under the same roof. This is not generally regarded as highly successful, and it is expensive for the results obtained. Failing the building of a new infirmary, I take the view that the next best thing is the appointment of a medical superintendent with the nominal title of master as well. I believe I am one of about three medical men with personal experience of this, and I believe that the result has been a smooth administration in each case. This system has now been in operation in Reading for some six or seven years. So satisfactory has it been to all concerned that when my predecessor retired some fifteen months ago there was not the smallest chance of reversion to the old type of administration.

I have been at pains to amplify my previous remarks for two reasons. First, as far as the British Medical Association is concerned, I believe that more exhaustive information on Poor Law is imperative. Secondly, my original letter has been construed in one quarter as a general onslaught on the workhouse master. Such an attack by me on another class of officer in the same service would be unfair, not to mention the waste of time. At the same time, I can appreciate the fact that my views on one class of institution would in effect deprive workhouse masters of many of the best appointments open to them. I have reached my conclusions fairly and without prejudice, from my own experiences and those of others, and I am certain that they are at least worthy of note by any prospective entrant to the service.—I am, etc.,

Battle Infirmary, Reading, Oct. 1st. D. Cyril Thomas.

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Sir,—In view of Dr. MacWilliam's letter of October 1st (p. 614) I beg further space to point out that the main regulations governing Poor Law institutions which are not separate infirmaries are contained in the Poor Law Institutions Order, 1913, issued by the Local Government Board. This order modified but maintained the general effect of the "Consolidated Orders" dating from about 1840. Any sort of division of the institution into departments is discountenanced and entire management is placed in one pair of hands. This was a workable arrangement universally eighty years ago and is still workable in undeveloped institutions, but in all others, and especially where a whole-time medical staff is employed, observance of the present regulations in detail would cause such difficulty that by tacit consent it has been evaded everywhere.

It follows that there are variations of actual procedure under the same order, and that medical officers will form varying opinions of Poor Law work. Hospitals have gone ahead most where the order was most ignored. Why should the Poor Law retain a scheme of administration which would ruin a growing hospital when observed fully, and which seriously hinders growth when it is partially observed? It would be easy to make a readjustment without costing the ratepayers a penny. The Ministry of Health mooted this in 1922, but apparently dropped the idea later.

The real question at issue goes far beyond any alleged antipathy between masters and doctors.—I am, etc.,

Southend-on-Sea, Oct. 2nd. R. A. S. Sunderland.

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## SURGERY OF THE TONGUE.

Sir,—Mr. Duncan Fitzwilliams, in his textbook *The Tongue and its Diseases*, reviewed in your issue of October 1st at page 596, refers to the Butlin series of cases. In my opinion Butlin reached the acme of success, now more than a quarter of a century ago. Happily, owing to advances in the application of radium, and more especially the exact regulation of the dosage, there are no longer required surgical procedures involving various degrees of deformity, defective articulation, and difficulties in swallowing saliva and in masticating food—squamous-celled carcinoma disappears under radium without leaving such deformities. As one instance among others of the height reached by surgery under Butlin, I saw the other day a patient in good health twenty years after Butlin had removed half the tongue and the pillar of the fauces. Subsequently, whilst, owing to illness, Butlin had only to stand by, one side of the neck was dissected down to the clavicle, including the removal of the sternomastoid and anterior border of the trapezius. There persists a defect in articulation and in the elevation of the arm above the shoulder.

On the other hand, the treatment of the infection of the neck has not yet been solved. The question includes not only the glands found microscopically to be already invaded by the squamous-celled carcinoma, but also those exhibiting a small cell infiltration, whether on one side of the neck or on both.—I am, etc.,

London, Oct. 1st. Walter G. Spencer.

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## PYREXIA DURING THE PUERPERIUM.

Sir,—My experiences of the practical working of the new Order (1926), whereby a woman who within twenty-one days of childbirth or miscarriage develops a temperature of 100.4° F. and maintains it during a period of twenty-four hours must be notified to the public health authority, may be of interest to some readers.

On August 17th last I attended a confinement, and all went well until August 23rd, when the woman got a slight rigor in the early morning. At 10 a.m. her temperature was 100°, at 10 p.m. 100°; but on August 24th at 2 p.m. it was 102°. This pyrexia went on till August 31st, with an average of 99° in the mornings and 101.8° at night. The only other symptom the whole time was slight headache; there were no abdominal symptoms whatsoever. To all appearances the lochia were normal. The patient never felt ill; she took her food well and slept well, and her bowels were normal. On August 24th I notified the case as one of "puerperal pyrexia." I practise single-handed in a country village, and we have a trained nurse who is also a trained and certificated midwife. This nurse was in charge of the case. She was at once suspended from attending midwifery cases by the county medical officer, who informed her by letter that as she was attending a case of "puerperal fever" she must not resume duty till given permission by the local medical officer of health. On September 21st, exactly one month afterwards, she was allowed to resume duty.

On August 26th, or three days after onset of pyrexia in the first case, I had to attend another confinement, and we had to send six miles to get a neighbouring village nurse. I did not attend the case myself; my friend the district medical officer of health visited it for me, and on the second day the woman had a temperature of 100° at 9 a.m. and 101.6° at night, but for the next four days it did not rise above 100.4°, except on one occasion, when it was 101.4° at 8 p.m. This woman had a good deal of abdominal pain and distension, which continued for four days till we got the bowels well opened, when the whole condition cleared

up, and, rightly or wrongly, I regarded the bowel condition as the sole cause of the pyrexia, because the lochia were normal and the improvement began immediately after the evacuation of the foul bowel contents. Here again the district nursing inspector suspended a special new nurse we had to get to liberate the one we had to send six miles for.

On September 3rd I attended personally a third confinement—they were all in the village—and another new nurse had to be got for the patient. Fortunately this case went on all right, but we had all this time two special nurses in addition to our own in this small country village, and all for what? I have lived and worked here for over thirty-five years, and we have carried on very well in all circumstances with one nurse, and nothing has ever happened. I have never had in my life to certify a death from puerperal sepsis. Three nurses here all at once made a "town's talk," and everybody wanted to know what had happened. We have a hard struggle to make up the yearly salary of one nurse, and how our nursing association is to meet the expense of all those other nurses I do not know.

It is interesting to note that our own nurse was suspended because she was in attendance upon a case of "puerperal fever," whereas I notified it as "puerperal pyrexia." Are they synonymous terms, or what is really puerperal pyrexia? My own opinion is that neither of these cases was puerperal fever in any sense of the term, and that all this notification and suspension of nurses is of no use or benefit to anybody. It causes a lot of anxiety, public gossip, and vexation, and we have a right to know where we stand. These nurses apparently take the mouth temperature of lying-in women from the time of delivery night and morning, so no wonder if puerperal pyrexia gets on the increase. Is the nurse to be suspended in every case of puerperal pyrexia irrespective of the cause? It would seem that it is so.

Surely a lying-in woman may run a little temperature during the early days of her confinement without its being due to puerperal sepsis. I venture to think the majority of medical men doing midwifery work think this meddlesome legislation has gone a bit too far. No wonder men are giving up the work. After my recent experience I do not blame them.—I am, etc.,

Felton, Northumberland, Sept. 23rd. ROBT. A. WELSH.

## SECOND ATTACK OF PITYRIASIS ROSEA.

SIR,—I am deeply interested in the memorandum on "Pityriasis rosea: a second attack," contributed by Dr. Gordon Edelston to your issue of September 24th (p. 549).

I have been on the look out for second attacks of this disease in the same patient ever since the publication of my paper upon pityriasis rosea in 1914 (not 1915). In the discussion which followed my paper (*British Journal of Dermatology*, 1914, p. 135 et seq.) Whitfield mentioned one experience of a second attack, Dore mentioned a doubtful instance, and Gray—who was not, unfortunately, reported—said that he had seen a case of pityriasis rosea in a patient who several years previously had been under the care of Dr. Radcliffe Crocker, who had diagnosed pityriasis rosea at that time.

I am still firmly of opinion that recurrences are extremely rare, and I have not myself met with a single instance of a well authenticated repetition of the disease in the same patient since the case reported by me in 1914. The implication of infection conveyed by Dr. Edelston's experience is, I think, equally uncommon. I am, etc.,

London, W., Oct. 3rd. E. GRAHAM LITTLE.

## THE ASSOCIATION ANNUAL MEETINGS.

SIR,—As a member of the British Medical Association of over twenty years' standing I plead for a recasting of our sectional programme. There is too much overlapping of our more important sections. Everybody who wishes to do so should be able to attend the whole of such generally attractive branches as Medicine, Surgery, Obstetrics and Gynaecology, and Children's Diseases. Overlapping there must be, and Tropical Medicine and the new and promising Historical Section may be taken as examples of secondary interest.

A large number of us attend yearly wishing to make the most of our time, but, too often, at the end of the week, we find important sections have had to be left once more unvisited. We devote a week of our time, and far more than a week of our incomes, to sit down to what is in all respects a most generous repast; and—we come away only partially satisfied, with many wholesome and much desired dishes on the menu perforce untasted. Is there any insurmountable objection to the eight most extensively attended sections being so listed that four may be taken on the four working mornings at 10 a.m. and the other four at 2.30 or preferably at 2.15 p.m.? I dare wager "a cock to Esculapius" that the two largest available halls would be comfortably filled by adopting this course, and that speakers and auditors would gain by it.

Equally important to many of us would be a modification of the present *matériel* of the sections themselves. Year by year they tend to become—each of them, I make no distinction—more and more arenas in which carefully selected and distinguished specialists present, rather to each other than to us, carefully prepared and highly advanced views on the subject laid down. We mutely watch the succession of learned enthusiasts quickly following each other with one eye on their proof-sheets and the other on the clock. Over and over again my fellow members have said to me on these occasions, "Why cannot a larger number of these most valuable and very technical papers be kept for the appropriate learned societies and their journals, whilst we have back again the old style broad-based representations and discussions of the matter in hand?"

Some of us feel that the sections are becoming too advanced. We feel there is a distinct danger of the meetings becoming the parade ground of the professors of the universities and medical schools. Direct the big 16-inch guns on the target if you like: we love to see the practice they make and rejoice in their excellence. But—give the rest of the artillery a chance to get in a few shots or it will lose some of its polish and tend to be kept away back in the arsenal.—I am, etc.,

Moseley, Sept. 26th. C. MARTIN MITCHELL.

## DRIED COMPLEMENT IN THE TROPICS.

SIR,—I was interested to read of Dr. Neave Kingsbury's experience with dried complement (September 17th, p. 518), as on the one occasion when I tried this material my results were no more favourable.

Having had some trouble with my guinea-pigs two or three years ago in India, I tried a sample of dried complement—also of German manufacture—which had recently been sent to the institute where I was working.

As in Dr. Kingsbury's case, the material was put up in sealed capsules, each of 0.1 gram, and the directions stated that a 1/10 solution was equivalent to fresh guinea-pig serum. A clear solution was obtained in this dilution, though only after a considerable time.

The test used was Method No. IV, Medical Research Council (Special Report Series No. 14), in which a dilution of 1/30 of fresh serum is the lowest dilution considered suitable for use in the test proper—that is, 1/30 used without the addition of antigen in the preliminary complement titration test.

At this distance of time I fear I cannot remember the details of my results with the dried serum, except that complete haemolysis was not obtained in half an hour with dilutions higher than 1/10 of the original solution of dried serum; thereupon I concluded that either the sample was not a representative one, or that the material, as prepared, was not suitable for the tropics.

Everyone, I suppose, knows how tricky guinea-pigs are in the matter of obtaining a satisfactory complement from them, but, provided they can be got to breed, a great deal can be done by careful adjustment of their food and housing conditions, and it has been my experience that since we went into these points we have had no further difficulty with complement.

At the same time, there must be occasions when one's

guinea-pigs fail one, in spite of all efforts, and for such occasions a good sample of dried complement would be invaluable.—I am, etc.,

L. A. P. Anderson,
Major, I.M.S.

Cambridge, Sept. 17th.

## FELO-DE-SE.

Sir,—I would thank your correspondent "Medico-Legal" for his interesting reply (October 1st, p. 614) to my previous letter (September 17th, p. 518). The brevity of my letter appears to have left "Medico-Legal" insufficiently informed. For obvious reasons I did not ask you to publish the evidence which I gave to the coroner, though I did submit it to you for your own information; this possibly explains the fact that the reply in your footnote was more emphatic than that of "Medico-Legal." There was no *post-mortem* examination. My evidence included the statement: "The operation performed proved that the deceased was not pregnant and that she had not recently been so." This statement was accepted by the coroner without question. There was no evidence of importance other than mine. The proved or accepted facts were that, though the woman believed herself to be pregnant, she was not in fact so; that it was her intention to procure abortion; and that no other person was concerned in the act which caused her death. I note with satisfaction that "Medico-Legal" confirms my own opinion that, even had the verdict *felo-de-se* been according to law, such a verdict should not have been returned except after an inquest before a jury. It is, of course, not for me to appeal to the Lord Chancellor for a fresh inquest, and I doubt if the relatives will consider such a course expedient.—I am, etc.,

Sydney A. Winstanley.

Manchester, Oct. 2nd.

## "ETHER CLONUS": ALDEHYDE AND PEROXIDE.

Sir,—In a letter under the above heading in your issue of September 24th (p. 566) Mr. H. Edmund G. Boyle draws attention to the dangers arising from the production of aldehyde and peroxide when oxygen or a mixture of $O+N_2O$ is passed through ether during its administration for anaesthesia.

The production of peroxide under these conditions is well known to chemists, and it is important that it should be also understood by anaesthetists. There is a further point which is at least equally important—namely, that the rate of formation of peroxide increases greatly as the amount present increases; consequently an ether which contains initially even minute amounts of aldehyde or peroxide will be much more prone to this change than one which is free from it. I draw attention to this matter to emphasize the fact that an amount of peroxide which is undetectable by the *B.P.* test, to which Mr. Boyle refers, will still suffice to accelerate this change. Consequently much more delicate methods of detecting must be applied if the purity of ether is to be maintained at the standard needed for perfect anaesthesia. Details of a delicate method of testing, based on the use of ferrous thiocyanate, were worked out in these laboratories and published in the *Year Book of Pharmacy* (1924, p. 615).

The late Mr. S. R. Wilson of Manchester, in a paper on "Ether convulsions," published in the *Lancet* of May 28th, concluded that "the convulsions are toxic in origin and due to the presence of impurities in ether," and he also advocated the precautionary measure of using only pure ether.

In my view Mr. Boyle is right in drawing attention to the significance of minute amounts of impurities, but in defining pure ether we have to look to a much higher standard of purity than that secured by adopting the *B.P.* test used by Dr. W. Inglis Clarke as mentioned in Mr. Boyle's letter.—I am, etc.,

Francis H. Carr,
The British Drug Houses, Ltd.

London, N., Sept. 27th.

## COURTESY CALLS.

Sir,—I was interested in Dr. Rawdon Smith's letter on the subject of courtesy calls (September 17th, p. 520). Some years ago I joined an old established practitioner as partner, and paid the usual calls on neighbouring practitioners. Not one of them returned my visit, and one gave me a very gloomy impression of the prospects of success in the district, and even recommended me to give up the idea of practising in the neighbourhood! I may have had an unfortunate experience, but if newly settled practitioners are accorded the same aloofness I was I am not surprised that courtesy calls are unpopular duties and often shirked.—I am, etc.,

M.B., D.P.H.

September 18th.

# Obituary.

## WILLEM EINTHOVEN, M.D., Ph.D.,

Professor of Physiology in the University of Leyden.

The death of Willem Einthoven, announced on September 29th, robs mankind of one of its most distinguished physiologists. Trained at Utrecht, he was appointed at the early age of 25 to the chair of physiology at Leyden; this post he held till this his 67th year. Unusually well trained and able in physics, Einthoven directed himself mainly to the development and perfection of recording instruments. Amongst these the most renowned is his famous string galvanometer. Starting his researches on the basis of the d'Arsonval galvanometer, he moved to the principle of Ader's instrument for recording submarine signals, an instrument which consisted of a very long single wire suspended vertically between the poles of a magnet. By greatly increasing the strength of the magnetic field, by introducing relatively short and very thin, and therefore light, fibres, and by using an optical projection system of high magnification, he eventually constructed a galvanometer greatly surpassing all previous instruments in sensitivity and quickness of movement. More than twenty years were given to the perfection of this instrument, and of the subsidiary apparatus such as recording cameras and time signals; and he thus created a piece of apparatus which of its kind was of unparalleled delicacy and accuracy. The records yielded by his instrument directly represented in curvilinear form the changes in the flow of current from instant to instant, requiring no analysis, as did curves previously won by means of the highly developed capillary electrometer. It was this feature of quick response, with the consequent direct representation of current flow, that rendered his instrument peculiarly applicable in clinical observation. Einthoven's models formed the basis of the well known commercial models now in use in the hospitals and laboratories of five continents; but the sensitivity of Einthoven's own models has continued until the present time to outstrip by far that of all similar instruments.

Einthoven did more than place his wonderful apparatus at the disposal of other workers. He pointed to many of the ways in which it might be employed. Amongst these he called attention particularly to its capacity to portray the electrical events happening in the human heart. Modern electro-cardiography, and the analysis of irregular heart action by galvanometric means, may rightly be said to have been inspired by, and in large part founded upon, two papers of his published in 1906 and 1908. His adoption of separate leads, pairing the three sets of adjacent angles of an approximately equilateral triangle, and his theoretical calculations of the line of the heart's electrical axis from the resultant curves, has proved fundamental to much later work.

The application of Einthoven's galvanometer to the study of the physiology and pathology of the heart beat followed quickly upon his description of the method; its full application to the study of electrical phenomena in other organs of the body has been more delayed. He himself illustrated the value of the instrument in recording the electrical events in nerve and other structures; for example, he succeeded in displaying impulses passing at each beat of the heart from this organ through the vagus nerve to the brain.

As early as 1894 he and Geluk described a method of registering heart sounds. Later he adapted the string galvanometer to the same purpose, a method that has been extensively and fruitfully followed up by others. In the

last years of his life he brought sound recording to a pitch of extraordinary perfection, using to this end a fibre so light that it responded directly to the sound waves agitating the atmosphere in which it lay, its movements being of sufficient amplitude to be recorded photographically. These were among the greatest of his achievements, though they by no means exhaust them.

Einthoven's renown grew steadily, and in recent years has found expression in many public honours conferred upon him; these culminated in the award of the Nobel prize for medicine in 1924, and, in this country, in his election last year to be a foreign member of the Royal Society.

Einthoven's work will be remembered for all time for the greatness of its contribution to method of observation. Einthoven himself will be remembered by those who knew him personally for his fascinating personality. A man of simple, almost of humble, habits, he was untiring in his work, in its exposition, and in the study of related problems. He awakened in both friends and associates a profound admiration by his genius, by the charming simplicity of his character, by his touching if not childlike modesty of thought and manner, by his patience, by his natural and profound courtesy, by the warmth of his hospitality to those privileged to enter his home, by his unswerving devotion to truth in the most exacting sense. These noble qualities endeared him to all who knew him at all intimately.

THOMAS LEWIS.

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Einthoven was born in 1860 in Samarang (Java), where his father was a medical practitioner. After his father's death in 1870 his mother brought her six children home to Holland and settled in Utrecht, where he was educated. He became a student of medicine there in 1878, and after completing his course was assistant to Snelling, and to Donders in the physiological department. From that appointment he was called to the chair of physiology at Leyden, where he spent the remainder of his life.

We are indebted to Dr. LEONARD HILL for the following brief reminiscence of a recent visit to Einthoven's laboratory.

It is just a year ago since I stood in Einthoven's laboratory in Leyden and was shown by him his last form of string galvanometer, in which the string was stretched in a vacuum and, so light and delicate was it, that the photographs of the string showed a ceaseless Brownian movement. Einthoven had there an instrument so responsive that he needed no valves to magnify the electrical effects which he wished to record, and he discountenanced the use of such valves as likely to distort the true reaction. He was then engaged in recording the electrical variations of the sympathetic system of nerves in the living animal—variations set up by natural impulses passing down these nerves—a new and most interesting field of research. And this most charming and modest man of science is now dead, and the book of his records is closed and will receive no more entries from the hand of the master; but the work which Einthoven has done in introducing the string galvanometer as a means of diagnosis, in elucidating the action of the heart in health and disease, and in recording the natural impulses coursing down the nerves stands as a pattern of accuracy and will be carried on by his pupils, using those methods which he has perfected. Einthoven is one of that band of scientific men which has made the University of Leyden so famous. He spoke English perfectly, and was a most cordial friend to his English visitors, a man full of humour and a broad humanity.

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## SVANTE ARRHENIUS.

Director of the Physico-Chemical Department of the Nobel Institute, Stockholm.

PROFESSOR SVANTE ARRHENIUS, who died on October 2nd at the age of 68, is acknowledged to have been one of the masters of modern physical chemistry. This high place was achieved with one vivid theoretical contribution—his theory of electrolytic dissociation. Poincaré, in his book on the *Foundations of Science*, writes: "There are facts common to several sciences, which seem to be the source of streams diverging in all directions. They are like that knoll of St. Gothard whence spring waters fertilizing four valleys." Such are the facts upon which is built the theory of electrolytic dissociation. No hypothesis has proved more fertile to our understanding of the behaviour of solutions. It has revolutionized our principles and methods of study. It has dominated every field of scientific inquiry in which the methods of chemistry find employment. We can afford to smile at the recollection that when Arrhenius presented the elements of his theory in a thesis for a doctorate it found small favour with his professors.

Biology has been particularly enriched by the conception of electrolytes and their ionization. Consider only the case of the dissociation of water and its relation to the activity of acids and bases. The modern technique of biochemistry, physiology, bacteriology, and experimental biology is dominated by the conception of the hydrogen-ion concentration which derives immediately from this hypothesis. Building upon these foundations such men as Sorensen, Michaelis, Lawrence Henderson, Mansfield Clark, Van Slyke, and J. Loeb have raised that amazing edifice of precise measurement, exact control, and quantitative definition of vital phenomena such as we find at its highest in the modern statement of the intricate electrolyte equilibria of the blood and tissues. The whole complex physico-chemical equilibrium which we call the living cell will submit to no quantitative definition in terms which do not involve the principles of electrolytic equilibria. To trace in detail, however, the echoes of this hypothesis in physiology is, in a measure, to cloud the most precious contribution of Arrhenius to biology. Arrhenius was one of those who insisted upon the imperative necessity for measurement in the study of vital phenomena. "Les propriétés des corps sont les propriétés des nombres," remarked De Charcourtois. Arrhenius vigorously challenged those who contended that the invasion of biology by mathematics was a mischievous thing. "With the help of formulae," he wrote, "which may be empiric or rational, scientific progress will be much more rapid than without them, and as the experimental material increases the empiric formulae will probably give place to rational ones. So will new laws of nature be detected." His argument and his evidence are presented in his book *Quantitative Laws in Biological Chemistry* (1915). The same faith is seen in his collaboration with Madsen in the latter's extensive study of the chemistry of the immunological reactions. Here, again, his concern was to condense into formulae the regularities which were disclosed in the elusive reactions of toxins and antibodies, agglutinins, precipitins, and lysins. The volume in which he told the story of this endeavour was quickly translated into English and published in the familiar book *Immuno-Chemistry*. Arrhenius, who was born in 1859 near Upsala, wrote in Swedish.

While we acclaim the imagination which gave birth to the theory of electrolytic dissociation, we acknowledge the faith which taught us that, although the "mathematical mill" would only grind out those same facts which we put into it, yet would it grind them "exceeding small."

R. K. C.

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DR. CHARLES GEORGE MACVICKER of Street, who died on August 30th at the age of 64, was a native of Londonderry, and received his medical education at Belfast and Edinburgh; he graduated M.B., B.Ch., B.A.O. in 1891. He commenced medical practice at Almondsbury, near Bristol, then removed to Isleham in Cambridgeshire, and from 1899 onwards lived at Street, where he was medical officer to the Street district of the Wells Union and to the Abbey Grange School for mentally deficient children. He was a member of the visiting staff of the Butleigh Hospital, to which, at the time of his death, he was senior medical officer. He was a member of the committee of the Somerset County Nursing Association from its foundation. He was an ardent Conservative in politics, and for over twenty-two years had been a churchwarden, serving under five successive rectors. He was vice-chairman of the parochial church council, vice-president of the Church of England Men's Society, and of the Ringers' Guild, and the moving spirit in many other church activities. He was a council school manager and a member of the committee of Cox's Charity,

president of the local choral society and of the Street football club, and vice-president of the county football association and of the Street cricket club. He served as a magistrate for some years, and was an enthusiastic member of the Somerset Archaeological Society.

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Dr. John Hamilton, who died on August 9th, was born in 1857, in Hamilton, Scotland, and received his medical education at Glasgow. He obtained the diplomas L.F.P.S.Glasg. in 1878 and the L.R.C.P.Ed. in 1882. He carried on medical practice in Eldon Square, Newcastle-on-Tyne, from 1881 to 1899, when he came to London, and subsequently removed to Edinburgh. After retiring from practice in 1921 he visited Australia, India, and South Africa. He was acting as surgeon in the s.s. *Goorka* when she brought home the survivors of the *Trevessa* from Mauritius in the summer of 1923. For the last three years of his life he resided at Newcastle-on-Tyne.

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The death took place at Edinburgh on September 16th, at the age of 84, of Dr. C. G. Mackay, who for many years practised at Lochcarron, Ross-shire. Dr. Mackay was born at Dornoch in 1843, graduated M.B., C.M. at Glasgow University in 1873, and had spent most of his life in practice at Lochcarron, where he acted as medical officer of health for the parish. He was a great enthusiast for the Gaelic language and literature, and in a very special measure enjoyed the confidence and affection of the Gaelic-speaking patients over a very wide area of the Western Highlands.

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By the sudden death of Dr. William Newlands Clemmey on September 27th the profession has lost one of its most energetic members. Born in Bootle in 1869, and educated at Merchant Taylors' School and University College, Liverpool, he obtained the diplomas M.R.C.S. and L.R.C.P. in 1891. After holding the appointments of junior and senior house-surgeon at the Bootle Borough Hospital, he commenced general practice locally; in 1896 he was appointed to the honorary surgical staff of this hospital. From that time to the day before his death his heart and soul were devoted to the work of the hospital, which he saw grow from year to year in extent and usefulness. He was a pioneer in *x*-ray photography and spent much time in developing this branch of the hospital work. During the war he served also as honorary surgeon to the Breeze Hill Auxiliary Hospital, and acted as chief medical officer to the venereal clinic at the Bootle Hospital. For some years he was a member of the borough council; he was also a member of the West Derby board of guardians. He was appointed a justice of the peace in 1903 and sat on the Bench the day before his death. He was for many years an active member of the British Medical Association. The funeral was held at St. Luke's Church, Great Crosby, on September 30th, when a large assembly of patients and friends bore eloquent testimony to the esteem and regard in which he was held by all classes of the community. He is survived by two sons, the younger of whom is a member of the medical profession.

## Universities and Colleges.

### UNIVERSITY OF OXFORD.

The degree days for the academic year 1927–28 are as follows, at 2.30 p.m. on each occasion:—*Michaelmas Term, 1927*: Thursday, October 20th; Saturday, November 26th; Saturday, December 17th. *Hilary Term, 1928*: Thursday, January 26th; Saturday, February 18th; Saturday, March 31st. *Trinity Term, 1928*: Thursday, May 3rd; Saturday, June 9th; Thursday, June 28th; Saturday, July 21st.

### VICTORIA UNIVERSITY OF MANCHESTER.

The following candidates have been approved in the examinations indicated:

D.P.H.—*Part I*: J. S. Smith. *Part II*: J. Cumming, Barbara M. Knight, M. V. Menon, and S. P. Wilson.

### UNIVERSITY OF GLASGOW.

The following candidates have been approved at the examination indicated:

Final M.B., Ch.B.—F. Adams, J. Agnew, R. W. Agnew, Frances W. Anderson, W. W. Ballardie, H. Bankhead, J. Baxter, M. Bowman, J. M. Brewster, G. Bryden, R. M. Buchanan, J. S. G. Burnett, J. B. Cadas, J. M. Clow, T. Craig, *Margaret G. Crockett, Isabella M. Currie, J. Darling, H. M. Davie, I. M. C. Dewar, E. D w, J. S. Drummond, J. E. Dunn, L. C. Durie, C. A. Ferguson, H. R. Ferguson, J. Fleming, A. W. Fraser, J. B. Fulton, *G. H. Gibson, R. D. Gilchrist, J. M. Gilston, H. P. Goldman, J. S. Graham, J. C. Gunn, T. Hamilton, D. Hannah, A. Hart, *A. K. Hill, W. S. Hodghton, J. A. Houston, W. Hunter, L. L. Hurwich, P. Jacobs, R. Jamieson, T. Johnstone, R. S. Kennedy, W. M. F. Ker, G. K. Kirkland, ‡W. Kirkwood, W. B. Kyles, Annie Laird, M. Lakshmiamma, L. J. Lang, J. H. B. Livingston, A. McCrorie, A. Macdonald, J. MacDonald, W. Macdonald, C. M. McIntyre, ‡C. McKay, †W. A. Mackey, S. A. Maclean, J. L. McNeill, R. McWhirter, H. D. Manderson, A. C. Morrison, Margaret Mulvein, Jessie W. Ogilvie, R. A. S. Peacock, Elizabeth M. Pollock, T. A. Pratt, A. R. Reid, J. B. Rennie, D. Robertson, J. K. Roger, B. B. Rosenheim, W. F. Sellar, A. R. Shaw, J. Simpson, H. S. Strachan, W. B. Sutherland, G. Swanson, Jean W. Symington, *Margaret W. Thomas, Annie R. Thompson, T. H. S. Tizzard, M. Tytler, Isabella B. Wiese, W. H. Wilkie, A. D. Williamson, Elizabeth R. M. Wilson, J. W. Wilson, W. G. Wilson, Elizabeth N. Young

* With distinction in Surgery. † With distinction in Medicine.
‡ With distinction in Midwifery.

## The Services.

### VOLUNTARY AID DETACHMENTS.

Substantial progress continues to be made in the organization of Voluntary Aid Detachments as part of the voluntary reserve of the medical services by the Crown, under the scheme which was launched four years ago with the approval of the Army Council; 821 detachments have now received official recognition, and their members number 20,077. Of these, 3,180 have undertaken an obligation to serve at home or abroad in the event of a national emergency, while the others have agreed to do duty as they may be required within reach of their homes.

### DEATHS IN THE SERVICES.

Surgeon Rear-Admiral George Albert Dreaper, C.B., R.N. (ret.), died at the Royal Naval Hospital, Haslar, on June 28th, aged 63. He was the son of R. H. Dreaper, of Finsborough House, Castlecomer, co. Kilkenny, and was educated at the Carmichael Medical School, Dublin; he took the L.R.C.S.I. in 1883, and the L.K.Q.C.P. in 1884. Entering the navy as surgeon in 1884, he became fleet surgeon in 1904, deputy surgeon-general in 1913, and surgeon rear-admiral in 1919; he retired in 1923. He served as staff surgeon of H.M.S. *Magicienne* during the South African war, and also in East Africa in the Jubaland expedition in 1900-1, when he received the appreciation of the Admiralty, and gained the South African medal and the General African medal with Jubaland clasp. In 1904 he served as fleet surgeon in H.M.S. *Fox* in the Somaliland campaign, including the capture of the Mullah's stronghold at Illig, on April 21st, 1904, was mentioned in dispatches, and received the East African medal, with a clasp. From 1908 to 1910 he was in charge of the surgical wards at Chatham naval hospital, in 1914-16 he filled the corresponding appointment at Plymouth, and from 1916 to 1919 was in command of the naval hospital at Hong-Kong. Subsequently he served till his retirement in command of Chatham naval hospital. He received the C.B. in 1920. In 1910 he married Constance Amy, daughter of Mr. Henry de Blaquiere of Fiddane, Gort, but leaves no children.

Lieut.-Colonel William Reed Murphy, D.S.O., Bengal Medical Service (ret.), died in London on August 7th, aged 77. He was educated at Clongoweswood College, co. Kildare, at Trinity College, Dublin, and at the Meath Hospital, where he won many prizes. After taking the L.R.C.S.I. in 1871, and the L.K.Q.C.P.I. in 1872, he entered the I.M.S. as assistant surgeon in March, 1872, passing into the service second out of a very large batch (40). As the first man, the late Lieut.-Colonel Alexander Crombie, C.B., had already gone through the Netley course as a candidate for the Army Medical Department, in 1871, he went straight out to India, and Murphy headed the Netley list and gained the Herbert prize. He attained the rank of brigade surgeon lieutenant-colonel in October, 1896, and retired in July, 1899. His whole career was passed in military employment, and he had a very fine war record. In 1878 he served in the Indian contingent called to the Mediterranean by Lord Beaconsfield, when war with Russia seemed to be imminent, and served in Malta and Cyprus. The expected war, however, was avoided. His first active service was in the second Afghan war of 1878-80, when he took part in the action at Saifudin, the occupation of Kandahar, the actions of Ahmed Khel, Arzu, and Patkao Shama, was mentioned in dispatches in 1878, and received the Afghan medal with a clasp. He subsequently served in many frontier campaigns; the Hazara expedition of 1888, was mentioned in dispatches, and received the frontier medal with clasp; the Lushai campaign of 1889 (clasp); in the Chin-Lushai campaign (1889-90) he was principal medical officer, was mentioned in dispatches, and was awarded the D.S.O. and another clasp. He was in the Chitral campaign of 1895, with the relief force (medal with clasp); the Tirah campaign of 1897-98, with the Kurram-Kohat force, and as principal medical officer of the Kurram movable column; he was twice mentioned in dispatches. Nearly twenty years after his retirement he was granted a good service pension, on July 6th, 1918.

# Medical News.

Sir John Rose Bradford, president of the Royal College of Physicians, will deliver an introductory address on "The study of medicine" at the opening of the winter session of the Durham College of Medicine, Newcastle-on-Tyne, on October 11th.

Sir William Willcox will deliver his presidential address at the meeting of the Medico-Legal Society at the house of the Medical Society of London, 11, Chandos Street, W.1, on Thursday, October 27th, at 8.30 p.m.

Under the auspices of the Child-Study Society, London, a course of lectures and discussions will be held at the Royal Sanitary Institute on Thursdays at 6 p.m. from October 13th to December 1st inclusive. The first lecture will be delivered by Dr. E. A. Hamilton-Pearson on the subject of the unadopted child. On January 4th a conference of educational associations will be held at University College, when the chairman will be the Hon. Sir John A. Cockburn, K.C.M.G., M.D., president of the Child-Study Society, and Dr. David Forsyth will speak on the subject of "Those first five years."

The British Institute of Philosophical Studies will hold a meeting at the Royal Society of Arts on Tuesday next at 8.15 p.m. to hear lectures on the standpoints of Freud and Jung by Drs. John Rickman and H. G. Baynes. Professor C. Spearman, F.R.S., will take the chair; tickets of admission can be obtained from Mr. Sydney E. Hooper, Director of Studies, at the offices of the Institute, 88, Kingsway, W.C.2.

Dr. J. S. Owens will deliver a lecture on atmospheric pollution, under the auspices of the Institution of Heating and Ventilating Engineers at the Caxton Hall, Westminster, on October 11th, at 6.45 p.m.

A lecture in German on Jewish health problems in Eastern Europe will be delivered by Dr. Julius Brutzkus, ex-Minister of the Lithuanian Government, at the Jews' College, Guilford Street, W.C.1, on October 9th, at 4.30 p.m. The chair will be taken by Mr. A. H. Levy, F.R.C.S.

The Birmingham and District Edinburgh University Club will hold its twenty-third annual dinner at the Queen's Hotel, Birmingham, on Thursday, November 10th, at 7.30 p.m. The chair will be taken by Dr. E. A. Milner, and Sir Robert Philip, President of the British Medical Association, will be the guest of the evening. Membership of the club is open to all male graduates of the university, and it is hoped that gentlemen who desire to be present, but who have not received notice of the dinner, will communicate with the honorary secretary, Dr. Ernest Bulmer, 87, Cornwall Street, Birmingham, before November 3rd.

The London Branch of the Bristol University Association of Alumni will hold its sixth annual dinner on Friday, October 28th, at 7.45 p.m., at the Criterion Restaurant. The Chancellor of the University, Viscount Haldane, will preside, and Professor Francis, Pro-Vice-Chancellor, will be the guest of the evening. The dinner (tickets 9s.) will be followed by dancing in the ballroom (3s. 6d. extra). Applications should be made to the honorary secretary, Dr. Elizabeth Casson, Holloway Sanatorium, Virginia Water.

The Caledonian Medical Society will hold its annual meeting at University College, Dundee, under the presidency of Dr. Angus MacGillivray, chief of the Dundee Highland Society, on Friday, October 14th. The annual dinner will follow at Kidds' Rooms, South Lindsay Street, Dundee. On the Saturday the members will pay a visit to St. Andrews, on the invitation of the University Court.

During the winter session a series of clinical meetings will be held at the Belgrave Hospital for Children, 1, Clapham Road, S.W.9, on the second Wednesday of the month at 4.30 p.m., beginning on October 12th. The meetings will be conducted by members of the staff, and medical practitioners are invited to attend.

Mr. M. S. Mayou will give a special demonstration for the Fellowship of Medicine at the Central London Ophthalmic Hospital on October 11th, at 4 p.m., free to medical practitioners. A clinical course in progress at the Central London Throat, Nose, and Ear Hospital will continue for two further weeks. On four successive Wednesdays, at 5.15 p.m., beginning October 12th, Dr. Heald will give a series of lecture-demonstrations to enable medical practitioners to familiarize themselves with recent advances in medical electrical treatment. An all-day course in diseases of children will be held by the Paddington Green Children's Hospital and the Victoria Hospital for Children from October 17th to 29th, and a two weeks' course in gynaecology will begin at the Chelsea Hospital for Women on October 17th. During October and November a comprehensive course will be held at the National Hospital, Queen Square, consisting of general neurology, pathology of the nervous system, methods of examination, and the anatomy and physiology of the nervous system. A series of demonstrations on the diagnosis and treatment of diseases of the eye will be given at the Royal Eye Hospital on Mondays to Fridays, at 3 p.m., beginning October 24th and continuing until November 5th. On October 17th Sir Humphry Rolleston will give the opening lecture of the series of lectures arranged by the Fellowship of Medicine on practical hints on medicine, surgery, and the allied specialties; at the Medical Society of London, 11, Chandos Street, W., at 5 p.m., he will deal with the diagnosis and treatment of some endocrine disorders. Copies of syllabuses are obtainable from the Secretary of the Fellowship, 1, Wimpole Street, W.1.

The annual Corporate Communion of the Guild of St. Luke will be held at the Grosvenor Chapel, South Audley Street, W.1, on St. Luke's Day, October 18th, at 8.15 a.m.; it will be followed by breakfast at Lipton's Café, 484, Oxford Street, if sufficient members signify their wish to attend. The annual general chapter will be held on the same day at King's College, Strand, at 5.30 p.m. The Bishop of Southwark will preach at the annual festival Evensong in Westminster Abbey, on October 23rd, at 6.30 p.m. Further information may be obtained from Miss J. S. Moore, King's College, Strand, W.C.2.

The congress of French-speaking physicians will be held in Paris under the presidency of Professor Teissier from October 11th to 15th, when the following subjects will be discussed: (1) Symptomatology of septicaemia, introduced by P. Gastinel and J. Reilly of Paris. (2) Pathology of oedema, introduced by E. Aubert and P. Mauriac of Bordeaux. (3) Medical indications and therapeutic value of splenectomy, introduced by N. Fiessinger and P. L. Brodin of Paris.

The following congresses will be held in Italy this month: The fifth congress of the Italian Association of Hygiene meets at Rome from October 12th to 16th, when papers will be read on hygiene and labour, by Professor A. Sclavo of Sienna; the provision of milk, by Professor F. Abba of Turin; the prophylaxis of typhoid fever, by Professor G. Pecori of Rome; the disposal of rubbish, by Professor P. Pulgher and Engineer G. Rodella of Genoa; the rural school and the antimalarial campaign in the Agro Romano, by Dr. G. Escalar of Rome. Further information can be obtained from the general secretary, Dr. Giovanni Palomba, via G. G. Belli 27, Rome. The twenty-third congress of the Italian Society of Laryngology, Rhinology, and Otology will be held in Parma from October 22nd to 24th inclusive. Details can be obtained from Professor F. Lasagna, Clinica Otoiatrica Parma. The second Italian Congress for Combating Tuberculosis, to be held in Milan from October 23rd to 26th, will be under the presidency of Professor E. Belloni. The general secretary is Professor Andrea Scarpellini, via Palermo 6, Milan. The seventh Italian Congress of Industrial Medicine will be held at Parma, Modena, and Carpi, under the presidency of Professor G. Gabbi, from October 24th to 26th inclusive, when the following papers will be read: (1) Pathology of electricity and $x$ rays, by Professors G. Arcllo and E. Pugno Vanoni; (2) tuberculosis and emigration, by Professor G. Allevi.

The Chief Justice, Saorstat Eireann, has appointed Dr. Edward E. Lennon to be one of his Medical Visitors in Lunacy, in succession to Sir William de Courcy Wheeler, M.D., resigned.

Dr. H. P. Newsholme, medical officer of health for Croydon, has been recommended as medical officer of health for Birmingham in succession to Sir John Robertson, who is retiring after twenty-five years' service. Dr. Newsholme received his medical education at Oxford and St. Thomas's Hospital, and has held appointments as assistant medical officer of health at Brighton, Southend, and on the Surrey and Wiltshire County Councils. Before going to Croydon he was medical officer of health for the North Riding of Yorkshire.

The Board of Education has issued two further documents (price 2d. each) in its Physical Training Series, one on this training in secondary schools and the other envisaging a more extended education than that provided in the syllabus of the Board. It has also issued a supplement on physical training for older girls (price 4d.), and a reference book for gymnastic training for boys (price 3s. 6d.). These may all be obtained from H.M. Stationery Office or through any bookseller.

Dr. Karl Sick, professor of surgery at Hamburg University, has been nominated an honorary professor by the Turkish Government for his help in the organization of medical education in Turkey.

At the International Dental Congress recently held at Copenhagen the executive committee awarded the Miller prize, founded in 1910, to Professor Wilhelm Dieck, director of the Dental Institute of Berlin University.

# Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to ***The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.***

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the British Medical Journal alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the British Medical Journal must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the Journal, should be addressed to the Financial Secretary and Business Manager.

The ***TELEPHONE NUMBERS*** of the British Medical Association and the British Medical Journal are *MUSEUM 9861, 9862, 9863,* and *9864* (internal exchange, four lines).

The ***TELEGRAPHIC ADDRESSES*** are:

EDITOR of the British Medical Journal, *Aitiology Westcent, London.*

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*

MEDICAL SECRETARY, *Mediocra Westcent, London.*

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 4737 Dublin), and of the Scottish Office, 6, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh.

## QUERIES AND ANSWERS.

### Oxaluria.

"Inquirer" writes: I have found oxaluria a growing trouble among my patients. Dieting gives undoubted results, but difficulty arises from the wholesale condemnation of "green and root vegetables." Years ago a French journal published an extensive list of the oxalic content of foods; unfortunately, I have lost the journal. Can any reader give a reference to information on this point?

### Expectation of Life.

"M. S." wishes to know the average expectation of life of clergymen. How far down the list do they come?"

*** We do not know of any recent analysis of the data, but there is no reason to doubt that the clergy still retain their pride of place as the longest-lived members of the community. According to Collis and Greenwood (*The Health of the Industrial Worker*, p. 74), who used the mortality figures of 1900-2, the expectation of life at age 20 of clergy (the census data—that is, including ministers of the Free Churches, Roman Catholic priests, etc.) was 47.1 years, the greatest in their list; the next highest figure was 46.2 years for agricultural labourers. According to the mortality figures of 1910-12 (the most recent available), the rates of mortality of clergy and agricultural labourers are still the most favourable among the large groups, so that the expectations of life—which are based upon the rates of mortality—must also still be the best; perhaps a year or two better than the figures of twenty years ago.

### A Prescription for Epilepsy.

"Medicus" writes: I beg to call attention to what seems to me an excellent remedy for epilepsy. The treatment has been tried on a man, aged 42, who has suffered from petit mal for thirty-eight years, formerly having 200 attacks a year, but now only forty, and improving. He had been treated by many distinguished physicians, but with little or no benefit. Potassium bromide is generally regarded as the essential drug, but the great difficulty in its use is the ouset of bromism when the salt is given in sufficient amount to keep down the attacks. In the treatment here recommended bromide is still an essential, but combined with another drug that wards off the bromism. The patient has been under my observation for a year, and is greatly improved in health. Below is given the prescription:

| | |
|---|---|
| Pot. bromid. ... ... ... ... ... ... ... ... | ʒj |
| Borax ... ... ... ... ... ... ... ... | ʒij |
| Mist. pyrethri ... ... ... ... ... ... ... | ʒij |
| Aquam ... ... ... ... ... ... ... ... | ...ad ʒiij |

Sig.: Take one teaspoonful in a little water three times daily after food.

The "mist. pyrethri" is made as follows:

| | |
|---|---|
| Tinct. pyrethri } Formalin } āā ... ... ... ... ... ... | mj |
| Tinct. lavandulae co. ... ... ... ... ... | ...ad mxv |

M. ft.; mitte ʒiij (i.e., 96 doses).

The general instructions given are: Attend to teeth and bowels; avoid red meat, which is toxic in epileptics; take ripe fruit, and plenty of vegetables and salads; attend also to mental hygiene.

### Income Tax.

*Liable, but not Assessed.*

"J. E. K." considers he has been liable to income tax from April, 1925, onwards, but so far he has not received any official inquiry or request for a declaration of income. Ought he to take the initiative?

*** It seems that the posting on church doors of a general notice to return income for assessment is sufficient to create a legal liability to render a return. "J. E. K.'s" safest course is to write to the local inspector of taxes saying that, as he may be liable to payment of income tax, he would like to receive one of the statutory forms of return for the current year. If, when the return is examined, the inspector requires particulars for the previous years, they should be given, as an assessment for 1925-26 may be made at any time up to April 5th, 1932.

## LETTERS, NOTES, ETC.

### Treatment of Yellow Fever.

Dr. Edwin A. Neatby (London, W.) writes: While science in capable hands, such as those of the lamented Adrian Stokes, is seeking to break the etiological chain which leads up to yellow fever and aims at the banishment of the disease from its remaining haunts in tropical America and West Africa, it would be of interest to know what treatment is commonly in use at the present day. Sternberg's (mercurial) mixture and Noguchi's polyvalent serum seem to be sheet anchors in the textbooks—the former, presumably, being intended to act as a parasiticide, while the latter is a direct antitoxin, introduced since the leptospiral origin of the disease became known. In 1889 I was much impressed by reading an article in an American medical journal on the comparative success (in a Florida epidemic of yellow fever) of such remedies as arsenic, phosphorus, and the diluted venom of certain snakes—all agents having, in substantial doses, haemolytic properties. I am credibly informed that these drugs, in suitably dilute form, still maintain their reputation in the tropical and subtropical regions of the New World, where they have mostly been tested. I do not see them mentioned in modern English textbooks, or that any medicinal treatment is regarded as of much value. If this is the case, the fact that these remedies are obviously selected in accordance with the homoeopathic rule of similars should not nowadays deter practitioners from using such well attested drugs, coupled, of course, with the usual nursing and hygienic measures. Such remedies should, of course, be administered in accordance with their well known toxo-therapeutic indications at suitable stages and for suitable features of this disease.

### Glycosuria without Symptoms.

Drs. A. D. McCallum and Fred. Blacklee (Preston) write: Within the past six months we have been consulted by two male patients, of middle age, whose attention had been drawn to the fact that their trouser legs and boots were bespattered with white spots, attributable to the use of a public urinal and consequent drying of urine on these parts of their clothing. In both cases no other symptom of ill health was complained of, and in both cases the urine was found to be loaded with sugar. We have not previously had such a complaint made.

### Herpes and Varicella.

Dr. Eric Kenderdine (Coventry) writes to record two cases this year of chicken-pox following shingles. In each case an elder sister first developed intercostal herpes, the younger contracting chicken-pox later. The interval between the rashes was thirteen and fourteen days respectively.

Dr. E. H. Sweet (Uckfield) reports a case of herpes and varicella occurring simultaneously in a woman, aged 52, now under his care. A very severe herpetic eruption developed over the area of the fifth left intercostal nerve on September 22nd. The patient appeared to be more ill during the next few days than is usually the case, and on September 26th a definite varicella eruption appeared all over her body.

Dr. J. Raglan Thomas (Exeter) writes that many years ago, at Llanelly, and subsequently in Exeter, he often noticed the association of cases of these complaints. He reports a recent case of a woman, aged 80, who, on September 25th, had severe pain in the forehead and scalp, along the lines of distribution of the supra-orbital nerve. This was followed next day by an extensive eruption of herpetic character, running into blebs, in the same area. On October 1st she developed a typical chicken-pox rash over the whole trunk, front and back. Dr. Thomas adds that chicken-pox has been prevalent in Exeter for some time, but he has not as yet been able to trace the infection in his present case.

### Vacancies.

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 51, 52, 53, 56, and 57 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 54 and 55.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *143*.